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ABSTRACT

Time coding forms, rating scales, interview schedules, and a questionnaire were developed for use in the Beginning Teacher Evaluation Study, a project designed to evaluate teaching effectiveness as demonstrated by student achievement in second and fifth grade reading and mathematics. The forms used to record data and the manuals detailing the administration, coding, and scoring of the instruments are included. The time coding forms are used for the observation of the classroom instruction received by six target students. The rating scales are to be completed following one day of classroom observation, and measure teacher, student, and classroom variables. The teacher questionnaires and interviews can be used to gather data concerning the teacher's instructional practices and plans for teaching, assessing, and interacting with each student. The research methodology leading to the design of each instrument is described, as well as its development and field testing. The inter-observer reliability data of the time coding forms during the field test are presented and discussed. (Author/GDC)

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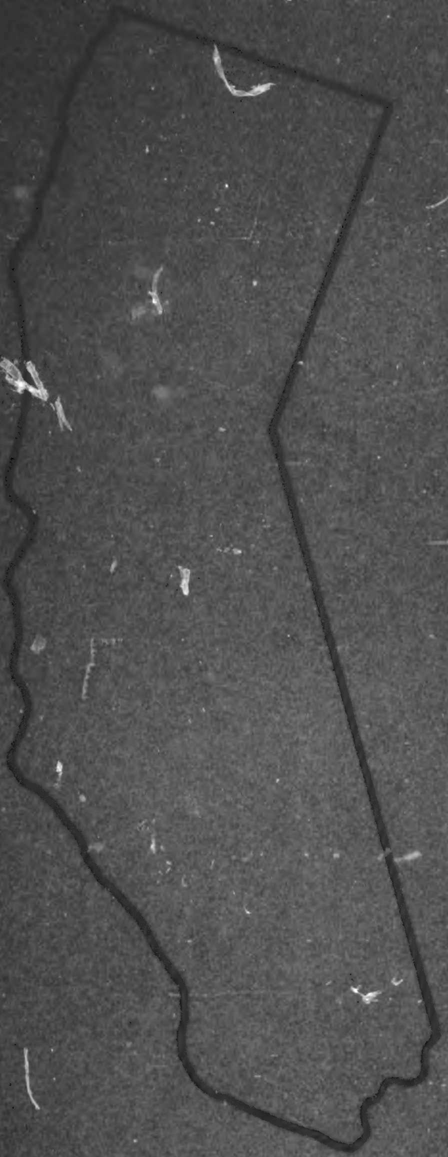

BTES

BEGINNING TEACHER EVALUATION STUDY

Technical Report Series

Technical Report I-5

THE DEVELOPMENT OF INSTRUMENTATION FOR A FIELD STUDY OF TEACHING

Richard S. Marliave
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February, 1977

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Technical Report I-5

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THE DEVELOPMENT OF INSTRUMENTATION FOR A FIELD STUDY OF TEACHING

by

Richard Marliave
Charles Fisher
Nikola Filby
Marilyn Dishaw

February, 1977

PREFACE

This is one of a series of reports by the Far West Laboratory for Educational Research and Development, concerned with the study of teacher effectiveness. Under contract to the California Commission for Teacher Preparation and Licensing, with funding provided by the National Institute of Education, the Laboratory is studying teachers in second and fifth grade classes in order to identify teacher behaviors and classroom qualities that are related to reading and mathematics achievement. This multi-year research effort is titled the Beginning Teacher Evaluation Study (BTES). The study addresses a major policy issue of the California Commission which is the agency charged with certifying the appropriateness of teacher training programs throughout the State. Simply put, the Commission wants information about what teacher behaviors are related to student outcomes. This information will then be used jointly by the Commission and the State institutions that it certifies in order to better insure that beginning teachers receive training in areas that have been empirically demonstrated to affect student learning.

This report documents instrumentation developed for use in the field study to be conducted during Phase III-B of the BTES. The developmental activities reported here were conducted during the continuation of Phase III-A of the BTES. Originally, it was intended that the instrumentation would include only observation procedures for collecting data on teacher and student classroom behavior. However, activities carried out during the continuation of Phase III-A indicated that direct reports by teachers should be obtained in conjunction with observational data as a means of assessing certain variables that cannot be observed effectively.

Therefore, interview and questionnaire instrumentation was developed in addition to observational procedures.

Two observational procedures were developed. One requires the direct coding of ongoing classroom interaction, using a time-sampling procedure. The other uses rating scales to represent the judgements of classroom observers in terms of fifteen different dimensions. Observers conduct the time-sampling for direct observation throughout the entire school day. At the end of the school day they complete the rating scales.

In addition to the observational procedures, four interview procedures and one questionnaire were developed. This instrumentation is used to obtain information on instructional processes directly form the teacher. Teacher record-keeping procedures were also developed for Phase III-B for the purpose of obtaining instructional information directly from teachers. However, the record-keeping procedures are presented in other BTES documents, not in this report.

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Beginning Teacher Evaluation Study
February, 1977

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I. INTRODUCTION

This technical report will describe and present the observation instruments developed for Phase III-B of the Beginning Teacher Evaluation Study (BTES), including a review of related developmental activities conducted during the continuation of Phase III-A of the BTES. Presented in this report are the Time Coding Forms and the associated training manual, to be used for observation of the classroom instruction received by six target students. Rating scales and their associated training manual are also included. These scales are to be completed at the end of a day of classroom observation. Interview Schedules and a Questionnaire are also included in this report with their associated training manual. The Interview Schedules and Questionnaire are to be used to collect data by the direct report of the teacher. Therefore, the Interview Schedules and Questionnaires are not observation instruments. They were not originally planned for use in Phase III-B. However, as will be discussed below, activities carried out during the continuation of Phase III-A indicated that direct reports by teachers should be obtained in conjunction with observational data as a means of assessing certain variables for which observational procedures are not appropriate. It should be noted that other instrumentation developed for Phase III-B of BTES, such as teacher record keeping procedures and student tests, are presented in other BTES reports.

II. OVERVIEW OF DEVELOPMENTAL ACTIVITIES

Developmental activities pertaining to the three sources of instrumentation mentioned above will be reviewed here. Tasks I, II, III, IV, and V from the continuation of Phase III-A are examined in relationship to the instruments presented in this report.

Task I consists, first, of reviews of research and, second, of clinical classroom observations, both for the purpose of identifying variables to be incorporated into Task I observation instrument development. Technical Note I-1 (Marliave, 1976a) reviews the results of Phase II of the BTES. Technical Report I-2 (Marliave, 1976b) reviews the results of Phase II, Phase III-A, and other current research on teaching, integrating these findings to identify the most promising observation variables for investigation in Phase III-B. Technical Note I-4 (Marliave, 1976c) presents the findings of clinical classroom observations conducted during the continuation of Phase III-A. These clinical observations provided further elaboration of some of the variables identified in Technical Report I-2.

Several of the instructional variables identified in Technical Report I-2 and Technical Note I-4 proved to be inappropriate for measurement by observation. These variables were generally in the domain of the teacher's planning for instruction. The interview and questionnaire instrumentation was developed primarily to assess variables in this domain.

Task I also includes the final development of the Time Coding Forms, Rating Scales, Interview Schedules, and Questionnaire (each of which is presented in this report). One of the developmental activities conducted with the Time Coding Forms was a field test of the observation procedures, including an analysis of inter-observer reliability. These reliability results are presented in this report in the section on the Time Coding Forms.

Task II is a study of the relationship between instructional time and the learning of reading and mathematics. For this purpose, observation instruments were developed for the measurement of engaged student instructional time in specific content categories of reading and mathematics. This instrumentation, which is presented in Technical Note II-2 (Fisher, 1975), served as the first stage prototype in the development of observation instruments for Task I. Two major contributions of the Task II instrumentation were the measurement of student engagement and the specification of content categories for observation. Although important changes have been incorporated into subsequent instrument development, this preliminary Task II instrument development (during the fall of 1975) greatly facilitated the related Task I developmental efforts (during the winter and spring of 1976).

An additional contribution of Task II was the demonstration that measured instructional time is associated with measured student learning, as reported in Technical Report II-3 (Fisher, et al., 1976a) and Technical Report II-4 (Fisher, et al., 1976b). This supported the major role of instructional time in the Task I observation instrumentation.

Task III involves the development of the dependent variable battery for Phase III-B of the BTES. The major contribution of Task III activities to the Task I development of observation instrumentation was the identification of "reactive" content categories in reading and mathematics. That is, data on instructional time as reported by teachers and student learning as measured with achievement tests were analyzed to determine which subtests and test items best show student learning as a function of instructional time. These subtests and items were considered "reactive" to instruction. This research strategy is presented in Technical Report III-1 (Filby & Dishaw, 1975). The results of the reactivity analyses are presented in Technical Note III-5 (Filby, 1976a) and Technical Report III-6 (Filby & Dishaw, 1976).

Two aspects of these reactivity analyses were important to Task I instrument development. First, they reinforced the Task II finding that measured instructional time is related to measured learning. Second, these analyses indicated which content categories are most useful for examining the effects of instruction. This second consideration, the specification of the relative reactivity of different content categories, is especially useful for identifying where greater specificity of content categories is useful and where it fails to contribute to the analysis of instructional time and learning.

One other contribution of Task III to the development of observation instruments was the provision of operational definitions for content categories. The content categories to which different test items apply were identified as part of the process of developing an item population. Hence, the test items within a given content category provide an operational definition of the category.

Task IV conceptualizes the appropriateness of instruction. The major contribution of Task IV to the instrument development of Task I was the elaboration of the concept of Academic Learning Time (ALT), as presented in Technical Report IV-1 (Berliner & Cahen, in press). The components of ALT (reading and mathematics content, task difficulty, and student engagement) were fundamental to the development of observation instruments for Phase III-B. This more intensive examination of the relationship between these variables and other instructional variables was essential to the process of identifying and conceptualizing the categories of instructional events that should be coded during observation.

Task V examines the forms and functions of experimental teaching units, which are designed to account for curriculum objectives and instructional time in different classrooms within a study of teaching. These considerations are important to the development of observation instrumentation because they pertain to the relative merits of measuring objectives and time (as with observation) versus controlling objectives and time (as with experimental procedures). Technical Note V-2 (Filby, 1976b) indicates that experimental procedures are not necessary and may not always be desirable as a means of accounting for curriculum objectives and instructional time in different classrooms. It is concluded that the assessment of ALT, as a content specific index of classroom learning, serves to account for objectives and time without introducing experimental controls. This line of reasoning led to the emphasis upon the observation of ALT as a means of obviating the use of experimental controls that would be disruptive to the natural environment of the classroom.

III. TIME CODING FORMS

The Time Coding Forms and the associated training manual were developed for data collection during observation of classroom instruction. The developmental activities outlined above are discussed below in relationship to decisions made about the design of the Time Coding Forms and procedures. The field test of Time Coding Forms and procedures is discussed later. Training procedures, inter-observer reliability results, and subsequent modifications of forms and procedures are all considered in the discussion of this field test. The product of these activities, time coding instrumentation, is then presented.

Design

The decisions made in designing the Time Coding Forms and procedures were all based upon the developmental activities of Tasks I, II, III, IV, and V of the continuation of Phase III-A. The most important decision pertaining to the procedures developed for direct observation was that all variables would be measured in terms of time. This provided a common metric allowing for direct comparisons among any of the observational variables. In addition, the time metric provides an "absolute scale," with an origin of zero and equivalency of units at all levels of the scale.

The use of the time metric is supported by findings throughout the previous BTES activities. As indicated by the review of previous BTES activities and related research conducted as part of Task I (discussed above), the quantity of academic instruction received by the student has proven to be fundamental to classroom learning. In addition, the study of instructional time (Task II, discussed above) demonstrated the efficacy of analyzing classroom instruction in terms of time. It should be noted that this field study of instructional time based upon a great deal of previous BTES conceptual work on instructional time, much of which is represented in the two technical reports of Annegret Harnischfeger and David Wiley (1975a and 1975b). The reactivity analyses of Task III and the design conceptualization of Task V both lend additional support to the use of time as the common metric for observational variables. Task III found time of instruction in particular reading and mathematics skill areas to be related to student learning in those areas. Task V concluded that the measurement of instructional time in content areas is advantageous for comparing instruction in different classrooms within the same field study. Hence, BTES findings have given consistent and strong support for the use of time as the unit of measure for the analysis of instruction.

Several methodological decisions for time coding procedures were tied directly to the use of the time metric. First, it was determined that data collection with time coding procedures should sample as much classroom instruction as possible. It was concluded that observation should cover entire school days and as many days as possible. Many practical considerations were relevant here. However, two factors were most important. First, previous BTES research, as reviewed for Task I, indicates that observational data in any form must be based upon relatively large samples of classroom instruction in order that relationships be found between teaching and learning. Second, the underlying logic of time-based data is that the total amount of time devoted to different activities should be related to the relative effects of those various activities. Therefore, large samples of observed time are necessary to obtain adequate estimates of total time. This logic is to be contrasted to analyses of traits that are assumed to be relatively stable over long periods of time, where limited samples of a trait should generalize to effects accrued over long periods.

A second methodological decision was the use of a limited number of target students (six) as the objects of observation. Clinical observations conducted as part of Task I suggested that time-based observation should focus on target students because accurate observations of the amount of time spent in each of several different categories, pertaining simultaneously to the same event, can only be recorded for a limited number of students. The experience gained conducting observation for Task II also suggested that it is advantageous to observe target students. Previous BTES research reviewed for Task I provided further support for the use of this procedure. It was indicated that instruction and learning should be related at the level of the individual student, rather than the entire class, as a means of identifying a more direct linkage between teaching and learning.

A third methodological decision was reached on the basis of the Task I clinical observations and the Task II time-based observation experience. It was concluded that in addition to collecting data on a limited number of target students, observers should use a time-sampling procedure, where brief moments of time are sampled at frequent intervals for each target student. This procedure is a practical necessity if accurate time-based data are to be obtained on a large number of complex variables. Activities carried out as part of the Task I clinical observations indicated that time-sampling at frequent intervals (such as every three to six minutes) provides stable data that generalize to the entire period of time from which they are sampled.

The Time Coding Forms and procedures are designed to obtain time-based data on numerous variables identified by the developmental activities conducted. Perhaps the most basic is the particular content area of the instruction received by a student. The importance of the quantity of academic instruction was indicated by the previous research reviewed for Task I. The findings of Tasks II, III, and V (discussed above) showed that instructional time in specific content categories within reading and mathematics is associated with learning in those categories. Therefore, the time coding procedures designed for Phase III-B incorporate eight subcategories within reading and 11 within mathematics. Seven general categories for time devoted to activities other than reading or mathematics were also included as a means of determining what alternative uses were made of a student's time, other than reading and mathematics instruction.

Another variable identified by developmental activities is the level of difficulty of the reading or mathematics task for the target student. Three levels of task difficulty were included on the Time Coding Forms because the clinical observations of Task I indicated that task difficulty is related to the amount and kind of learning that will result from a given amount of instructional time. It was concluded that observation should distinguish between practice or review and more challenging instruction. In addition, each of these two levels of difficulty should be distinguished from tasks that are excessively difficult for the student, where little or no learning would be expected to result.

Several developmental activities indicated that student attention or engagement during reading or mathematics instruction is highly related to levels of associated learning. Both the research reviewed and the clinical activities conducted as part of Task I suggest that task engagement should be coded during observation. The findings of Task II also support this conclusion. The Task I review also suggested that student independent work habits, as manifested by the student's level of attention when working independently, is an important variable. The Phase III-B time coding procedures distinguish between self-paced (independent) and other-paced activities as a means of examining student attention when working independently.

The Task I review of research identified several important teaching behaviors that are related to student learning outcomes. One such variable was the academic orientation of instruction, one manifestation of which is the teacher's management and structuring behaviors. For this reason, the Phase III-B time coding procedures record the structuring and directions and the task engagement feedback (discipline) provided by the teacher.

Other important teaching behaviors were identified in relationship to the tailoring of instruction to the needs of individual students. In addition to the Task I research review, Task I clinical observations and the analysis conducted for Task IV underscored the significance of the relationship between teaching behaviors and the instructional needs of individual students. Variables identified by previous research that have been included in the present Time Coding Forms are monitoring, feedback, and explanation that is related to immediate student instructional needs.

The Task I research review also indicated that the teacher's instructional involvement and contact with students is associated with student learning. Verbal interaction with students and instruction directed to many students (small group or whole class instruction) were among the important teaching behaviors here. In light of these findings, the Time Coding Forms include questioning and general explanations, in addition to the verbal teacher behaviors mentioned above (feedback and explanations for immediate student need). The time coding procedures also examine the focus of the teaching behavior, distinguishing between instructional behaviors directed toward the individual student and those directed toward a larger group of students. This provides an indication of the number of students involved in a teacher's instructional behavior. One other relevant variable included in the time coding procedures is the source of an instructional behavior. This allows for the examination of the proportion of instruction in which the teacher is involved directly.

The research review and clinical observations of Task I, as well as the analysis of Task IV, indicate that the patterns and sequences of teacher and student classroom behavior are related to the levels of learning that accrue. The time-based coding procedures designed for Phase III-B provide for the examination of interactive patterns and sequences in two ways. First, all events are coded so as to preserve their sequence. Second, all behaviors and situational variables coded for a given event must be meaningfully interrelated, so that the patterning or sequencing of behaviors within an event is preserved.

Field Test

The design decisions discussed above resulted in the development of a time coding form and a manual for the use of that form by observers. The form and the procedures covered in the manual were field tested as a means of determining whether the observation system was viable and, assuming viability, as a means of obtaining field experience and some initial data that could be used to modify and elaborate the instrumentation. This field test included a period during which observers were trained and a subsequent period during which those four observers collected data that were analyzed for inter-observer realiability.

The coding form that was used to collect data for the field test analysis of inter-observer reliability is presented in Figure 1. Although this form is essentially the same as that which was used at the outset of the training, it should be noted that some modifications were made during the field test training.

The training manual that was used at the outset of the field test training is presented in Appendix A. Many elaborations and modifications of the procedures described in this manual were developed during the field test training. These elaborations and modifications were incorporated into the final observer's manual to be discussed later.

Training was conducted for a total of ten days, during which four field workers were trained in the use of this system by a FWL staff member. The field workers had no previous experience with this observation system. Two field workers had previous experience as classroom teachers and two did not.

TEACHER ☐☐ GRADE ☐☐ OBSERVER ☐☐ DATE ☐☐☐☐

STUDENT ☐☐☐

Sequen	Time	Set	Content	Diff & Learner			Instruct'al Interaction			
		S G	R M O N T B	E M H	EQ EO EW EC ED	NI NW NO	AO AQ AF EN EP	SD TE	T O S C	T G
1										
2										
3										
4										
5										
6										
7										
8										
9										
0										

STUDENT ☐☐☐

	Set	Content	Diff & Learner			Instruct'al Interaction			
	S G	R M O N T B	E M H	EQ EO EW EC ED	NI NW NO	AO AQ AF EN EP	SD TE	T O S C	T G
1									
2									
3									
4									
5									
6									
7									
8									
9									
0									

STUDENT ☐☐☐

	Set	Content	Diff & Learner			Instruct'al Interaction			
	S G	R M O N T B	E M H	EQ EO EW EC ED	NI NW NO	AO AQ AF EN EP	SD TE	T O S C	T G
1									
2									
3									
4									
5									
6									
7									
8									
9									
0									

Reading: LV DC CW WS CP OR SL SP RL BT

Mathematics: AS RG CT PV MU DI FD SA VA RL BT

STUDENT ☐☐☐

	Set	Content	Diff & Learner			Instruct'al Interaction			
	S G	R M O N T B	E M H	EQ EO EW EC ED	NI NW NO	AO AQ AF EN EP	SD TE	T O S C	T G
1									
2									
3									
4									
5									
6									
7									
8									
9									
0									

STUDENT ☐☐☐

	Set	Content	Diff & Learner			Instruct'al Interaction			
	S G	R M O N T B	E M H	EQ EO EW EC ED	NI NW NO	AO AQ AF EN EP	SD TE	T O S C	T G
1									
2									
3									
4									
5									
6									
7									
8									
9									
0									

STUDENT ☐☐☐

	Set	Content	Diff & Learner			Instruct'al Interaction			
	S G	R M O N T B	E M H	EQ EO EW EC ED	NI NW NO	AO AQ AF EN EP	SD TE	T O S C	T G
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Figure 1

Field Test Coding Form

Full-day meetings at the Laboratory, during which observation procedures were discussed, were held on three occasions (at the beginning, in the middle, and at the end of the training period). The other seven days of training consisted of practice observation in classrooms during the morning and meetings at Far West Laboratory in the afternoon. The field workers always observed in pairs, alternating partners so that each of the four field workers observed at least twice with each of the other three observers. Observers worked in pairs so that they could compare their coding results and discuss discrepancies. Generally, observers coded for 20 to 30 minutes, then left the classroom to compare coding and discuss discrepancies while the actual teacher and student behaviors were still fresh in their memories. These discrepancies were discussed further in the full group at the afternoon meeting.

Observation during training and for the subsequent collection of inter-observer reliability data involved the coding of instructional events for six target students. These six students were identified by their teacher as students whose achievement was about average for their grade (second or fifth). It was requested that this group of six students also be selected to represent a variety of classroom behavior traits, ranging from diligent to disruptive.

Ten different classes from six different schools in four school districts of the San Francisco Bay Area were included in this training. Six classes were at the second grade level, while the other four were at the fifth grade. Three of the second grade and two of the fifth grade classes were combination classes (students from two grade levels). The target students observed in these combination classes were, however, either second or fifth grade students. Combination classes are not excluded from Phase III-B, so there was no reason to exclude them from this field test.

Data collection for inter-observer reliability was conducted over four full schools days in two second and two fifth grade classes, all in the same school.

The two second grade classes had been observed on the last day of observation during training. One of the second grade classes was a combination class, including second and third grade students (the target students were at the second grade).

The observers worked in pairs, alternating partners each day, so that each observer was paired with each of the other three observers during the four days of data collection. Also, each observer conducted two days of observation at each grade level (second and fifth). Two pairs of observers collected data each day, so that a total of eight days of data were collected.

Target students in the four classes were selected by their teachers on the same basis as target students had been selected for the training (described above). Observers were instructed not to communicate with each other regarding any aspect of the observation at any time during the period over which the reliability data were collected.

After the collection of reliability data had been completed, the FWL staff member who had conducted the training checked the observation coding sheets for procedural errors that could be identified without any reference to the actual classroom interaction that was coded. For example, setting was not to have been coded for events that were coded as transitions, non-academic instruction, or breaks. Therefore, setting codes for these events were eliminated where they occurred. This kind of checking and correction was considered to be an appropriate and desirable data cleaning procedure. Similar checking and correction of coding sheets will be carried out for data collected with the Time Coding Forms during Phase III-B.

Data analysis for inter-observer reliability was conducted on data collected by four observers over four days of observation at each of the two grades (second and fifth). Six target students were observed in each of the four classrooms (two at each grade level) and each class was observed on two days. Hence, a total of 24 target students were observed on each of two days, yielding 48 student-days of observation data.

All data were collected according to a time-sampling procedure wherein an event is sampled for coding once every three to six minutes for each of the six target students observed in each class. The flexibility of sampling intervals was necessary to allow for differences between classes, situations, and observers. It is expected that this flexibility enables observers to code with greater deliberation when necessary, resulting in more accurate coding than would be obtained if all observers were locked into the same pace, regardless of the class or instructional situation.

Observers coded the time span from which each event was sampled. As mentioned above, this could range from three to six minutes. The time span in minutes for each event was attributed to that event. Therefore, when events were summed for a given coding category, the actual numbers summed were those for the time span in minutes of each event within that category.

The time-sampling observation procedure requires that data be summed over a sufficiently long period of time so that the sampled events can be expected to provide a reliable estimate of the entire population of events from which they were sampled. It was decided that the single school day would be the best period over which to sum sampled events because the school day is the general unit of time by which teachers plan and conduct instruction and the school day includes a substantial number of sampled events.

Summing time per category (for each of 53 categories) per day per student (for each of 48 student days) yields 48 paired units of observation for each of 53 coding categories. Separate inter-rater reliability analyses were conducted for each of the 53 coding categories because it was expected that the reliability would vary greatly from one category to another. This did, in fact, occur. A major purpose of the field test was to identify individual coding categories for which reliability appears to be low, thereby diagnosing where modifications of procedures are required. The analyses for each of the 53 coding categories were conducted on all 48 paired observations per category, pooling these observations across grades, classes, students, and observers. This was necessary to provide an adequate sample size for the reliability analyses conducted.

It should be noted that it was not possible to collect the larger set of data that would be necessary to carry out analyses of generalizability, using procedures such as those discussed by Erlich and Shavelson (1976). It would have been desirable to analyze the number of days of observation and the number of raters per day that would be necessary to yield specified levels of inter-rater reliability. However, observation was conducted on only one or two occasions in each class by each field worker. In addition, each field worker was paired with each of the other three field workers on only one or two of the four observation days. Therefore, there was never more than two paired observations of the same student and the same pair of observers never collected data on the same student more than once. These limitations were necessitated by the limited number of observation-days available to the field test. Unfortunately, one result was to preclude analyses of important facets of generalizability that would otherwise have been conducted.

Inter-observer reliability results based on the paired observation data for each of the 53 observation categories appear in Tables 1 through 5. Table 1 presents results for the setting and general content coding categories, Table 2 presents those for reading, Table 3 presents mathematics, Table 4 presents difficulty and learner moves, and Table 5 presents results for instructional interaction.

The codes for individual categories are entered for rows on the left side of each table. The labels for the codes are given below each table.

Table 1

Results for Setting and General Content Coding Categories

Code	Single Meas.	Mult. Meas.	Stand. Error	MN 1	MN 2	SD 1	SD 2	r 12
S	.45	.62	27.0	76.4	54.6	37.0	42.9	.54
G	.12	.22	26.2	42.9	77.3	22.2	42.5	.48
R	.85	.92	10.6	86.6	96.9	31.9	33.3	.88
M	.80	.89	8.0	32.4	34.8	18.9	17.5	.79
O	.81	.89	8.3	13.2	12.8	15.4	21.6	.83
N	.60	.75	17.2	48.4	42.7	25.2	29.9	.61
T	.14	.24	10.6	36.5	24.1	15.3	11.2	.38
B*	.85	.92	14.0	74.8	77.1	34.8	36.2	.83

* One observation lost due to a data processing error, leaving N = 47.

S = seatwork
G = groupwork
R = reading
M = mathematics
O = other academic
N = nonacademic instruction
T = transition
B = break

Table 2

Results for Reading Coding Categories

Code	Single Meas.	Mult. Meas.	Stand. Error	MN 1	MN 2	SD 1	SD 2	r_{12}
LV	-.02	-.04	5.0	0.4	3.4	1.5	7.2	.12
DC	.34	.51	12.0	14.4	4.5	21.4	8.1	.67
CW	-.05	-.12	1.8	0	0.9	0	2.5	0
WS	.08	.14	11.3	5.8	15.8	7.5	16.5	.30
CP	.53	.69	14.6	22.6	31.6	18.9	25.9	.60
OR	.28	.44	6.3	3.6	9.7	6.9	9.8	.46
SL	.02	.04	8.0	9.1	3.3	8.7	8.5	.12
SP	.40	.57	5.4	7.1	4.1	7.8	6.7	.45
RR	.82	.90	8.5	18.2	14.6	21.2	20.6	.82
RB	.43	.60	6.4	5.4	8.7	6.8	10.5	.51

LV = long vowels
DC = decoding (other than long vowels)
CW = compound words
WS = word structure (other than compound words)
CP = comprehension
OR = oral reading
SL = silent reading
SP = spelling
RR = reading related
RB = reading below test level

Table 3

Results for Mathematics Coding Categories

Code	Single Meas.	Mult. Meas.	Stand. Error	MN 1	MN 2	SD 1	SD 2	r 12
AS	.31	.48	9.1	4.8	7.7	10.0	12.1	.33
RG	.20	.33	8.1	5.4	2.4	11.0	6.8	.24
CT	.75	.86	4.1	2.5	2.1	8.6	7.5	.74
PV	--*	--*	0	0	0	0	0	--*
MU	.92	.96	3.1	5.2	4.9	11.0	11.1	.90
DI	.54	.70	1.5	0.6	0.4	2.6	1.8	.56
FD	.96	.98	2.5	5.5	6.3	11.6	13.5	.95
SA	.39	.56	5.7	3.6	2.9	7.6	6.9	.37
VA	.53	.69	4.9	1.7	1.2	6.0	7.9	.53
MR	.20	.33	6.4	1.7	5.7	4.3	9.7	.36
MB	.24	.39	3.4	1.4	1.2	3.0	4.6	.25

* Coefficients for PV (place value) not computed because all observations gathered were zero minutes.

AS = addition and subtraction without regrouping
RG = addition and subtraction with regrouping
CT = computational transfer
PV = place value
MU = multiplication
DI = division
FD = fractions and decimals
SA = spatial application
VA = verbal application
MR = mathematics related
MB = mathematics below test level

Table 4

Results for Difficulty and Learner Coding Categories

Code	Single Meas.	Mult. Meas.	Stand. Error	MN 1	MN 2	SD 1	SD 2	r_{12}
E	.20	.33	16.9	28.9	16.4	24.7	14.6	.34
M	.31	.48	24.9	83.0	112.9	41.0	31.1	.54
H	.43	.60	10.2	7.2	1.7	18.4	7.6	.66
EQ	-.03	-.06	1.9	1.2	0.4	2.2	1.4	.00
EO	.77	.87	5.2	8.4	8.6	9.4	11.6	.76
EW	.72	.83	11.0	42.4	39.7	23.1	18.2	.72
EC	.49	.66	12.2	37.2	47.9	17.6	21.0	.60
ED	.43	.60	1.3	0.7	0.7	1.6	1.9	.42
NI	.15	.26	10.7	20.3	11.9	15.7	8.3	.32
NW	.44	.61	7.0	21.3	20.0	10.2	8.4	.43
NO	.81	.90	8.3	23.8	25.2	19.2	19.0	.79

E = easy
M = medium
H = hard
EQ = engaged, question
EO = engaged, oral statement
EW = engaged, written response
EC = engaged, covert response
ED = engaged, question or statement on directions
NI = not engaged, interim activity
NW = not engaged, waiting for help for further instructions
NO = not engaged, inappropriate behavior

Table 5

Results for Instructional Interaction Coding Categories

Code	Single Meas.	Mult. Meas.	Stand. Error	MN_1	MN_2	SD_1	SD_2	r_{12}
AO	.67	.80	3.9	4.2	4.6	7.1	6.2	.65
AQ	.14	.25	8.3	6.8	7.3	6.9	10.5	.14
AF	.27	.43	5.8	5.5	5.0	6.5	7.2	.26
EN	.38	.55	2.8	1.9	2.4	3.2	4.0	.38
EP	-.17	-.42	8.3	4.7	7.7	5.0	9.8	-.18
SD	.58	.73	5.6	14.2	21.3	10.7	11.3	.72
TE	.12	.21	3.9	2.5	2.5	3.9	4.3	.11
T_1	.27	.43	12.2	32.9	45.9	12.3	19.9	.50
O	.59	.74	3.3	2.3	1.9	5.9	4.4	.60
S	.22	.37	4.0	3.7	1.9	5.3	3.9	.27
C	.27	.43	1.8	1.0	0.9	2.3	2.0	.26
T_2	.73	.84	5.6	12.5	11.5	11.2	9.9	.71
G	.19	.32	11.0	27.3	39.2	10.6	16.9	.43

AO = academic observation
AQ = academic question
AF = academic feedback
EN = explanation in response to student need
EP = general explanations
SD = structuring, giving directions
TE = task engagement feedback

T_1 = teacher source
O = other adult source
S = student source
C = curriculum source
T_2 = target student focus

G = group focus

The headings along the top of each table indicate what statistic is presented in each column. These are the same for each of the five tables. The first column (after the left-hand column with the category codes) presents the inter-observer reliability computed using Winer's (1962) coefficient (r_1) for the unadjusted single measurement ("Single Meas."). The second column represents the inter-observer reliability computed using Winer's coefficient (r_3) for unadjusted multiple measurements ("Multi. Meas."). These coefficients are discussed further below. The third column presents the standard error of measurement ("Stand. Error"). The fourth column presents the mean of the observations entered first ("MN 1"). The fifth column presents the mean of the observations entered second ("MN 2"). The sixth column presents the standard deviation of the observations entered first ("SD 1"). The seventh column presents the standard deviation of the observations entered second ("SD 2"). The eighth column presents the Pearson product moment correlation between the observations entered first and those entered second (r_{12}).

As noted above, the reliability coefficients reported here are the single and multiple measurement coefficients, unadjusted, from Winer (1962). The single measurement coefficient, in this analysis, gives the reliability of the summed observation data from one observer for one student on one day. The multiple measurement coefficient in this analysis gives the reliability of the average of the summed observation data from two observers, each coding the same student on the same day. The "unadjusted" coefficients are used rather than the "adjusted" coefficients so that any systematic difference between the observations entered first and those entered second would be considered part of the error of observational measurement (thereby providing a more conservative or lower estimate of reliability). There were two reasons for this decision. First, it is not clear that the adjustment procedures are generally appropriate for reliability analyses, in that they may overstate the reliability coefficient

(Bartko, 1976). Second, the reliability analyses conducted here include data from different observers within the set of observations entered first and within the set entered second. This limits the possibilities for adjustment of systematic differences, in that the combination of different observers within the first and second sets of observations treats systematic differences between combined observers as part of the error of measurement. Thus, the more conservative, unadjusted, estimates of reliability are used here.

The single and multiple measurement coefficients are both reported here because each is relevant to certain types of analyses anticipated for Phase III-B. The single measurement coefficient pertains to analyses where the unit of data analyzed is the summed time in observation categories for single school days. The multiple measurement coefficient is more relevant to analyses where several different days of observation data are summed and treated as one data unit. In this case, each of the several days of observation data can be considered different measurements sampled from the same school term, so that the analysis is essentially one involving multiple measurements.

It should be noted that some of the entries in these tables are based on data sets that include many observations of zero minutes. Therefore, some of these results are highly unstable and should be examined cautiously.

Conclusions based on the inter-observer reliability results indicate, generally, that the time-based observation procedures worked well. Inter-observer agreement was acceptable for most coding categories, demonstrating that the overall system is a practical and effective means of obtaining observational data in classrooms. However, while most categories yielded acceptable results, a number of problem areas were identified. Therefore, the examination of these data was concerned primarily with determining which coding categories required modification. The discussion that follows will consider those categories that appear to show unacceptably low inter-observer reliability.

Although each of the various statistics presented provides relevant information, this discussion will focus on those categories for which the multiple measurement reliability coefficient is less than .50. The multiple measurement coefficient is particularly important because most of the Phase III-B analyses will involve the summing of several different days of observation data for a school term. The multiple measurement coefficient estimates reliability for the sum of two observation-days of data (see the discussion above). The other statistics will be considered where they are useful for clarifying a problem.

Coefficients greater than .50 will not be discussed because this field test was a developmental effort where materials and procedures were not fully elaborated. The process of conducting field test training was, itself, an excellent means of determining how to elaborate the observation procedures for persons with no previous experience using the system. Therefore, it is expected the Phase III-B training will benefit greatly from the field test experience so that a coding category with a reliability of .50 in the field test should have an appreciably higher reliability in Phase III-B. In addition, the multiple measurement coefficient applies to the sum of two observation-days of data. Phase III-B analyses will generally involve sums of from four to as many as ten days of data. Therefore, an observation category yielding a multiple measurement coefficient of .50 in the present analyses might be expected to yield higher reliability during Phase III-B, wherein more days of data will be summed for analyses.

The results for the setting and general content categories, presented in Table 1, indicate that the groupwork and transition categories were low in reliability. The groupwork category is logically related to the seatwork category. It is unclear why the reliability for groupwork is so much lower than that for seatwork (multiple measurement coefficients of .22 and .62 respectively). One possibility appears to be that the setting category, "groupwork," was semantically confused with the instructional focus category, "group." Note in Table 5 that the reliability for the category, group focus, is substantially lower than that for its logical counterpart, target student focus. In fact, the labels "seatwork" and "groupwork" do not really fit the category definitions to which they are applied. The definitions are based on the pacing of the instructional activity, where activities for which the student sets his/her own pace are to be distinguished from those for which someone else sets the pace. Therefore, the category labels were changed from "seatwork" and "groupwork" to "self-paced" and "other-paced." These labels are semantically more appropriate and avoid the possible confusion with the group focus category.

The low reliability for the transition category (multiple measurement coefficient of .24) was attributed to the conceptual complexity of this category. Transition was used to refer to a wide variety of activities that occur between instructional activities. The specification of what is and is not an instructional activity and when these activities begin and end was insufficient at the time of the field test. Therefore, what had previously been coded as transition was subdivided into three separate categories: wait, transition, and management. Wait refers to periods during which the target student has no assigned activity. Transition refers to periods of movement from one activity to another. Management refers to business unrelated to any instructional activity, such as collecting milk money. Each of these three categories was fully elaborated in the materials developed for Phase III-B (presented later). It is expected that each of these three more narrowly specified categories will yield a higher reliability during Phase III-B than did the transition category in the field test.

Five of the ten reading content categories (Table 2) require attention. Long vowels and compound words are both highly specific subcategories separated out of superordinate categories also in the observation system. Long vowels is a subcategory of decoding, while compound words is a subcategory of word structure. It was decided that long vowels should not be differentiated from other decoding, so that two categories of the field test (long vowels and other decoding) became one category for Phase III-B (decoding). The decoding category was only marginally acceptable in the field test analyses, but it was substantially higher in reliability than long vowels (multiple measurement coefficients of .51 and -.04 respectively).

The same strategy was applied to compound words and word structure, in that the subordinate and more specific category, compound words, was combined with its more general superordinate, word structure. However, the multiple measurement reliabilities of both of these categories was essentially zero (-.12 for compound words and .14 for word structure). Given the importance of the word structure category for the BTES achievement test battery, it did not seem appropriate to collapse this category with any other. Furthermore, it did not appear reasonable that such low reliability would be inevitable for this relatively straightforward content category. Therefore, it was decided that more extensive training on the content categories would be conducted for Phase III-B than had been conducted for the field test. If the word structure category (or any other category) still failed to show an acceptable level of inter-observer reliability, then the data for that category would have to be excluded from further statistical analyses.

A more specific subordinate category from the comprehension category, word meaning, was added to the observation system as a means of compensating for the elimination of the two more specific categories discussed above (long vowels and compound words). The inclusion of at least one relatively specific content category was required to permit analyses comparing the instruction-learning relationship for content categories ranging from highly general (such as all reading) to highly specific. Experience working with teachers keeping logs during the continuation of Phase III-A indicated that word meaning might be a more reliable category than either long vowels or compound words. Furthermore, the comprehension category had shown reasonably good reliability (multiple measurement coefficient of .69), indicating that a specific subcategory taken from the comprehension category might yield an acceptable level of reliability.

The other two problem categories in the area of reading content (Table 2) were oral reading and silent reading (multiple measurement coefficients of .44 and .04 respectively). An examination of the means for the first and second sets of observations for these two categories indicates that the low reliability of each category could be due, in large part, to a confusion between these categories. The means for oral reading are 3.6 and 9.7 (first set and second set respectively), while those for silent reading are 9.1 and 3.3. Summing oral and silent reading yields a mean of 12.7 for the first set and 13.0 for the second set. A confusion of oral and silent reading is not as improbable as it may appear. Students often read aloud when they are supposed to read silently and they commonly read along silently during an oral reading group while another student reads aloud. Although a more detailed elaboration of the definitions of these categories might have solved the reliability problem, it was decided that oral and silent reading should be combined because the distinction is not important in terms of relationships with subtests of the BTES achievement battery. The combination of oral and silent reading was labeled "practice reading."

Four of the mathematics content categories (Table 3) showed low reliability, but all were at least above .30 for the multiple measurement coefficient. Addition and subtraction without regrouping and addition and subtraction with regrouping were both somewhat low (.48 and .33 respectively), suggesting that these two categories might be combined. However, debriefing of one of the observers revealed that a simple misunderstanding had probably caused the low reliabilities of these categories. It is likely that this confusion can be avoided during Phase III-B. In addition, the with and without regrouping distinction is important both conceptually and in relationship to the BTES achievement battery. Therefore, it was decided not to combine these two categories. Special attention to the regrouping distinction during training should avoid problems with these two categories in Phase III-B.

The other two mathematics content categories with low reliability were mathematics related and mathematics below test level (.33 and .39 respectively for the multiple measurement coefficients). These categories are both "other" categories designed to encompass all mathematics activities that do not fit anywhere else. The only distinction between the two categories is that mathematics related includes activities of a difficulty level roughly comparable to that of the BTES test battery (such as money problems), while mathematics below test level includes activities that are much more simple than skills tested with the BTES battery (such as copying numerals or learning basic number concepts). It is necessary to have at least one "other" category in order to insure that no mathematics activities are excluded entirely. In addition, the distinction between activities comparable to the test items and those at a much lower level of difficulty than the test items was considered essential to analyses relating time in these activities to learning outcomes on the tests. That is, the more simple activities may produce valuable learning, but at such a low level that it is not reflected in test scores. For these reasons, the two categories, mathematics related and mathematics below test level, were retained. Greater elaboration of these categories in training materials and more careful attention to them during training will be used to achieve higher levels of reliability in Phase III-B.

Four of the difficulty and learner coding categories (Table 4) require attention. Two of these are difficulty level categories. The multiple measurement coefficients for easy and medium were .33 and .48 respectively. This was not overly discouraging, in that it was anticipated that difficulty level coding would present greater problems than the coding of other categories. Examination of the means for the first set of observations and those for the second set of observations (Table 4) reveals that relatively more time was coded as easy or hard in the first set and relatively more was coded as medium in the second set.

The field test observers were instructed to code the medium level of difficulty whenever they were unsure what level to code. This procedure was intended for use when the direct determination of difficulty was impossible due to the lack of overt student responses. However, it appears that much more time was coded as medium during the second set of observations than during the first set. That is, the second set of observations manifests a greater inclination of the observers to refrain from judging the task difficulty level. Therefore, it was decided that the reliability of the difficulty level coding could be increased by requiring observers to make the best possible choice among the three categories even when no immediate overt response is available. This will result in more inference on the part of observers, but it will reduce the tendency for some observers to systematically allocate more time to the medium category than other observers. Emphasis during Phase III-B training on procedures for inferring the difficulty level when overt student responses are not immediately observable should increase inter-observer agreement in making these inferences.

The engaged, question coding category showed an inter-observer reliability of essentially zero (multiple measurement coefficient of -.06). However, the average amount of time coded per student-day for this category was less than one minute, whereas an average of more than eight minutes per student day were coded in the engaged, oral statement category (which includes all oral student responses except questions). The multiple measurement coefficient for engaged, oral statement was quite high (.87). Therefore, the engaged, question and engaged, oral statement categories were merged to create an engaged, oral response category.

The not engaged, interim activity category showed low reliability (multiple measurement coefficient of .26). However, there is no other category with which this one could be appropriately combined. None of the engaged student behavior categories would be appropriate. Not engaged, waiting was maintained as a separate category because of the special interest in student wait-time that emerged from the clinical observations. Not engaged, inappropriate behavior was not combined with not engaged, interim activity because these are conceptually distinct categories, in that the first involves behavior inappropriate to the task at hand, while the second involves behavior that is integral to that task. Therefore, it was decided to rely upon further elaborations of the not engaged, interim activity category in training materials and discussions as a means of obtaining higher inter-observer reliability in Phase III-B.

Eight categories pertaining to instructional interaction (Table 5) require attention. The academic question and academic feedback categories were both low in reliability (multiple measurement coefficients of .25 and .43 respectively). Consideration was given to combining these two categories, because they both involve verbal interaction between teacher and student. However, it was decided that the distinction between teacher questioning and teacher feedback is an important one. Furthermore, combining two categories of low reliability would probably just create another category of low reliability. In addition, no other combinations involving either of these two categories were conceptually acceptable. Therefore, academic question and academic feedback were retained as separate categories. Further elaborations in training materials and discussions will be used to increase reliability for Phase III-B.

The general explanations category obtained the least reliable field test results of the entire observation system. The multiple measurement coefficient was -.42. The cause of this outcome is not readily apparent. Debriefing of field test observers did not reveal any conflicts or misunderstandings that would explain the negative reliability. Furthermore, this category is relatively simple on a conceptual basis. It includes lectures and other prepared explanations that do not arise spontaneously during the school day. Explanation in response to student need is the counterpart to general explanations.

This category consists of teacher explanations that arise during the course of ongoing instruction and are directed toward an immediate student need. Thus, explanation in response to student need would appear to be the more complex of the two categories, in that it involves relationships between the teacher's explanation and the immediate learning situation of the student. Nevertheless, explanation in response to student need obtained a much higher multiple measurement coefficient (.55). It was decided that combining general explanations with any other category might create more problems that it would eliminate, given its large and unexplained negative reliability. Furthermore, no useful reconceptualization of the category was apparent, in that it already appeared to be a relatively clear and simple coding category. Therefore, no changes in this category were made. Hopefully, greater emphasis during training and additional elaboration in training materials will improve the reliability of this category. It is also possible that some unusual event was the cause of the low field test reliability for this category, yielding distorted results. If general explanations does not show acceptable inter-observer reliability during Phase III-B, then it will have to be excluded from future analyses.

Task engagement feedback showed low inter-observer reliability (multiple measurement coefficient of .21). However, this is a relatively distinct category that could not be combined with any other category. The task engagement feedback category is the only instructional behavior category that is not limited strictly to the academic substance of instruction. Instead, this category is broadly defined to include all teacher behaviors intended for the control of student task-related behavior (as by praise, punishment, etc.). It would not be appropriate to subdivide task engagement feedback into more narrowly defined categories, because it already includes only a small fraction of the average student's reading and mathematics instruction (2.5 minutes per school day in the field test).

Therefore, it was decided that this category would be left in its present form. Further elaborations in Phase III-B training materials and discussions will be used to increase reliability.

Six instructional interaction categories are used to indicate the source and focus of the other seven categories (the seven consisting of various teaching behaviors). These six categories were generally low in inter-observer reliability, with only one of the four source categories and one of the two focus categories showing acceptable reliability by the criterion of the present discussion. However, none of the categories had a multiple measurement coefficient below .30, so it is possible that further elaborations of training materials and procedures could bring these categories into an acceptable range. Furthermore, the source and focus of instructional interactions are relatively less central to the observation system and its underlying conceptual framework. Therefore, no changes were made in these six categories. However, additional elaborations in materials and discussions will be incorporated into Phase III-B training.

It should be noted that one observational category was changed because of considerations unrelated to the field test reliability results. The mathematics content category, fractions and decimals, was changed to fractions. Decimals were shifted from this category to the mathematics related category. This change provides a better match between observation data and achievement test data, in that the modified coding category, fractions, can be matched with the fractions subtest of the mathematics achievement battery.

Time Coding Instrumentation

The Time Coding Forms and Observer's Manual were modified for use in Phase III-B data collection, incorporating decisions based on the field test results, as discussed above.

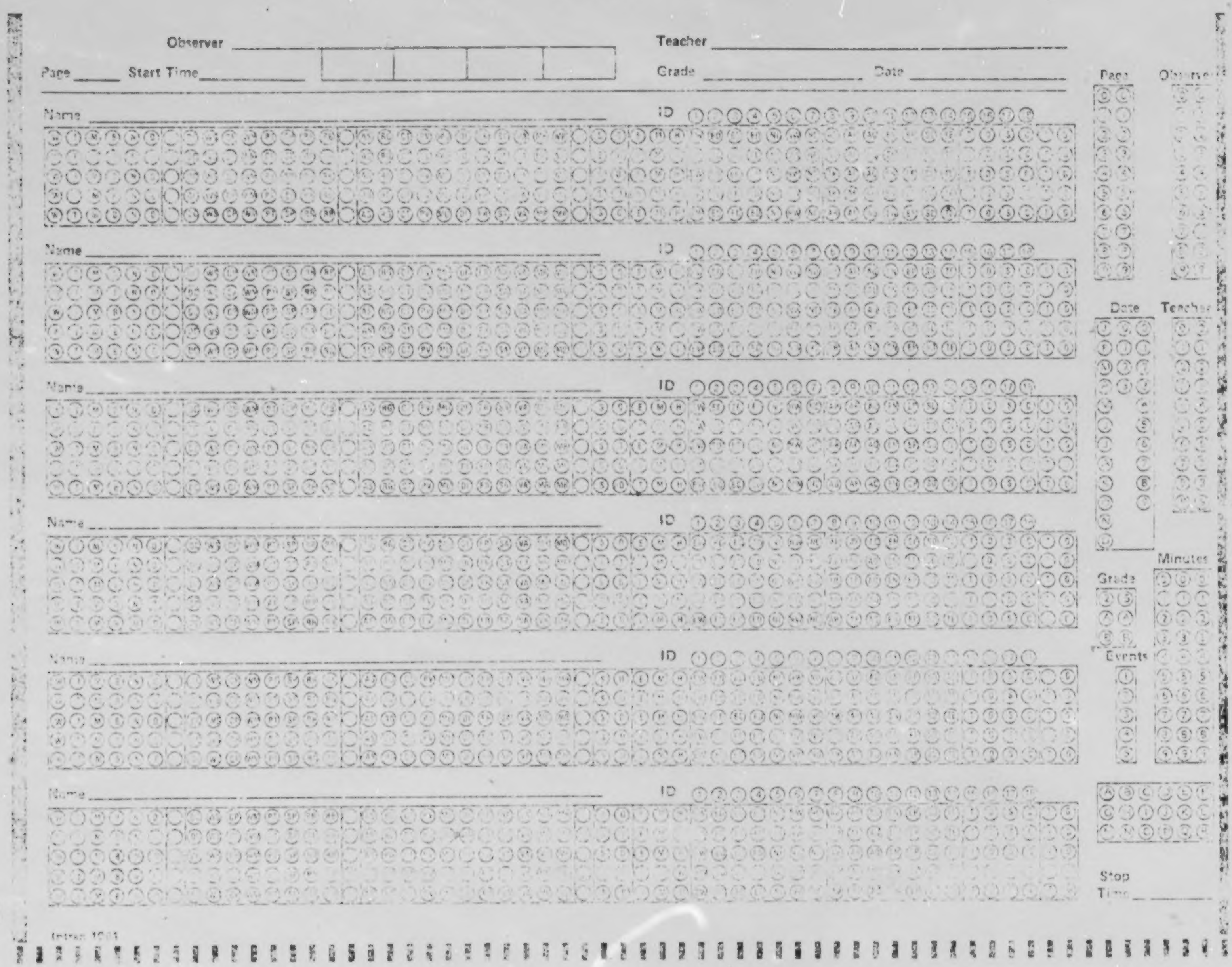
A major change in the Time Coding Forms themselves was the development of optically-scanned coding forms. This development was carried out by FWL staff working cooperatively with INTRAN Corporation of Minneapolis, Minnesota. INTRAN Corporation will produce the forms and conduct the optical scanning for Phase III-B. The optically-scanned coding form is presented in Figure 2.

The shift to optical scanning procedures was an outgrowth of difficulties encountered in the analysis of field test reliability data. The coding form used in the field test required observers to write in letters representing the observational categories to be coded (see Figure 1). This produced a massive amount of data that had to be keypunched for data processing by computer. It was projected that the cost of keypunching the quantity of data anticipated for Phase III-B would far exceed the cost of developing and processing optically-scannable coding sheets. An additional benefit of changing to optical scanning was that darkening bubbles can be accomplished more quickly than writing out letters.

The Field Test Manual for Time Coding Procedures (Appendix A) was completely rewritten with extensive elaborations, incorporating the conclusions of the analysis of field test data (discussed above). The revised manual, called the "Observer's Manual," is presented in Appendix B.

Figure 2

Optically-Scanned Coding Form



Observer ____________

Teacher ____________

Page ____ Start Time ____________

Grade ____________ Date ____________

Name ____________ ID

Name ____________ ID

Name ____________ ID

Name ____________ ID

Name ____________ ID

Name ____________ ID

Page

Observer

Date

Teacher

Minutes

Grade

Events

Stop Time ____________

IV. RATING SCALES

Rating scales were developed for use in Phase III-B because the review of previous BTES research as part of Task I (discussed earlier) indicated that rating scales are effective data collection tools for research on teaching. In particular, the results of Special Study A (Tikunoff, Berliner, & Rist, 1975) demonstrated that rating procedures are powerful tools in the study of teaching. Special Study A used rating procedures to analyze ethnographic protocol data, yielding 60 variables related to teaching effectiveness. In addition, Shavelson and Dempsey (1975) concluded on the basis of a literature review that global rating scales provide the most generalizable observational data. Hence, rating scales have been developed for Phase III-B of BTES.

Design

The variables for which rating scales have been developed were identified on the basis of the review of previous BTES findings and the clinical activities conducted as part of Task I (discussed above). These activities produced a list of 22 variables that were both appropriate for rating scale assessment techniques and promising in their relationship to instructional outcomes. Additional review and modifications of the rating scales (described below) resulted in 15 variables, with one rating scale per variable.

These 15 variables are drawn from five of the seven observable classroom variable domains and the additional non-observable variable domain that were identified by the Task I review of previous BTES findings. The rating scales are particularly useful for the classroom atmosphere variable domain, in that it is difficult to measure variables in this domain by any other procedure. Four of the rating scales fall into this domain: cooperation; student responsibility; conviviality; and acceptance of feelings. Two other domains for which rating scales are especially well suited are the academic orientation of instruction and the clarity of instructional communication. Two rating scales involve the academic orientation of instruction: cognitive task orientation and structuring. Four scales are related to the clarity of instructional communications: clarity; complexity of communication; consistency of message; and abruptness.

Rating scales were developed for two other observable classroom variable domains for which other assessment procedures will also be used. The interviews and questionnaire will be used to assess the extent to which instruction is tailored to the needs of individual students. However, two rating scales are also rated to this domain, attention to students and flexibility. The domain involving the teacher's instructional involvement and contact with students will be assessed primarily by means of the time coding procedures. However, a rating scale, attention to students, is also relevant here.

The domain of non-observable classroom variables identified by the Task I review consists of variables related to information processing by the teacher. For the most part, this domain is best assessed on the basis of the direct report of the teacher, using the interviews and questionnaire. However, three rating scales are also relevant to the informaton processing domain. Two of these scales, knowledge of mathematics and knowledge of reading, involve ratings of the teacher's academic information processing skills. The third, expectation of student success, involves the teacher's processing of interpersonal factors in relation to academic considerations.

Rating Scale Instrumentation

The rating scales were constructed through a process of iterative reviews conducted by the BTES staff. Each of the initial 22 variables was cast in the form of a seven point rating scale. A definition was generated for each scale and examples were outlined for classroom conditions or activities representing several points on the scale. Key phrases from the scale definition were used to anchor these points on each scale. At this stage, the 22 scales and their definitions were reviewed by the BTES staff. Revisions were made in some scales, while several others were deleted. In general, scales were deleted because they overlapped with items already being assessed by the observation procedures. In addition, several of the scales were found to use value-ladden terms that could be viewed negatively. Such scales were dropped. After the review process, the final 15 scales remained.

The Rating Scales Form appears in Appendix C. The Manual for Rating Scales appears in Appendix D.

V. INTERVIEW SCHEDULES AND QUESTIONNAIRE

Interview schedules and a questionnaire were developed for Phase III-B because the Task I review of previous BTES findings (discussed earlier) indicated that certain non-observable instructional variables warrant investigation. Direct report of the teacher appeared to be the most appropriate means of obtaining many of these variables, in that they relate to the teacher's information processing patterns.

The development of interview schedules and the questionnaire involved two stages. First, the basic design was outlined, identifying the variables that should be assessed with this instrumentation. Second, initial prototypes of the instrumentation were developed, field tested, and revised, culminating in the final form of the interview schedules and questionnaire. Development of the initial prototype and the field testing were carried out under contract by FWL to NOMOS Institute of Berkeley. The NOMOS staff worked in a close cooperative relationship with FWL staff.

Design

The Task I review of previous BTES findings indicated that variables related to information processing by the teacher comprise a domain of non-observable classroom variables that show important relationships with instructional outcomes. The interview schedules and questionnaire were designed to obtain responses relevant to several aspects of information processing by teachers. The following four areas were of primary concern: (1) the teacher's emphasis upon affective rather than cognitive considerations; (2) the level of specificity with which the teacher communicates regarding instruction; (3) the extent to which the teacher is consciously directed toward substantive academic goals; and (4) the extent to which the teacher is dependent upon the curriculum materials as determinates of the structure and sequencing of instruction.

It was decided that the interview schedules and questionnaire should also obtain responses relevant to one of the observable variable domains, the extent to which instruction is tailored to the needs of individual students. This domain is assessed, in part, by some of the rating scales (discussed above). In addition, the time coding instrumentation provides some information on the extent to which instruction meets the needs of individual students. However, it was decided that the teacher's account of the instructional process in his or her class would also provide important data for this variable domain. Therefore, the interview schedules and the questionnaire were designed to include information on the relationship of instruction to the needs of individual students.

Field Test

The development of interview schedules and the questionnaire involved a two-cycle field test of four interview guides and the questionnaire. The purposes of the field test were: (1) to provide an early forecast of the responses that these interview guides would be likely to elicit; (2) to permit accurate estimation of the time required to complete the interviews; and (3) to note any procedural problems that might arise in connection with any of the interviews.

The first cycle of the field test was conducted by two interviewers. Each of the four interview guides was piloted on ten teachers, making a total of forty interviews that were completed in the first-cycle field test. On the basis of the results of this first cycle, minor changes were made in Interview Guides I and II, while substantial changes were made in Interview Guides III and IV.

Only Interview Guide III was included in the second-cycle field test. The insignificant changes effected in Interview Guides I and II obviated further re-piloting of these guides. Although Interview Guide IV was changed radically, its final form involved a follow-up to other Phase III-B data collection activities so that it could not be re-tested in isolation. Furthermore, the final form of this guide involved simplified procedures that should not require field testing.

The second-cycle field test of Interview Guide III was conducted with two interviewers and ten teachers. No major changes were necessary on the basis of the results of this second-cycle. However, at the conclusion of the second-cycle field test a final review of interviewing procedures was conducted. It was decided that greater standardization of procedures for interviewing would be necessary to insure reliability among the 17 different field workers that would ultimately use those procedures. This standardization did not involve changes in the content of the interviews. Rather, it consisted simply of changes in the procedures whereby the content is elicited.

Throughout both of these field test cycles, interviewers attempted, to the maximum extent possible, to duplicate the interview conditions anticipated for the actual Phase III-B data collection. However, it was necessary for teachers to respond to interview questions out of an imaginary time context, because the field test took place during summer vacation. Teachers were asked to respond as they would have if questions had been posed during the preceding school year. This required that teachers recall the special needs of individual students and situations that occurred at specific points during the school year. Nevertheless, most teachers agreed that their responses were at least "typical," if not exactly correct for each individual student.

Interview and Questionnaire Instrumentation

The final product of this developmental process was the Interview and Questionnaire Manual that appears in Appendix E. This manual includes all the forms and procedures necessary for conducting the four interview guides and the questionnaire. Section II of the Manual, "General Guidelines of Interviewing," outlines the procedures that were incorporated for the purpose of standardization among field personnel (see discussion above). Procedures specific to each interview are included with the outlines and forms for each interview. Also included in the Manual are the results of a content analysis conducted on field test responses. These results were included in the manual to give field personnel a feeling for the range and variety of responses that they might expect when conducting these interviews.

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Appendix A

Field Test Manual

for

Time Coding Procedures

Setting

- Seatwork (self-paced)
- Groupwork (other-paced)

Content

- General
    - reading and language (English)
    - mathematics
    - other academic (science, social studies)
    - nonacademic but instructional (story-time, art) (do not code any instructor or learner moves)
    - transition/management unrelated to any particular instructional activity; could be a discussion of work habits in general
- Specific
    - particular skill area in reading or mathematics

Difficulty

- Very easy -- errors only at "chance" level, practice, easy review
- Appropriate/reasonable -- student must make an effort to do the task
- Too hard -- correct responses only at chance level, missing virtually all problems or questions

[Note: Difficulty is judged by overt student responses on the particular task observed or one just before or after that is essentially the same task]

Learner Move (target only)

- Engaged
    - Asks question
    - Makes verbal statement or response
    - Makes written statement or response

      When simultaneous with an instructor move, code ongoing learner move.
    - Covert response (listens, reads silently, other thinking -- response correctness or difficulty not determinable directly)
- Not engaged
    - Socializing, misbehaving, bored, daydreaming, etc. (might also need help but has given up on the task)
    - Needs help -- wait time

Instructor Move (recorded for target only if received by target)

- Academic monitoring observation (teacher looks at or listens to student response)
- Academic monitoring question (teacher requests written or oral response)
- Academic feedback (correct or incorrect only -- no explanation)

Structure/direct (instructions, goals, intro, summary, etc.-- content relevance determined by content coding, so that could be management structuring without academic content)
Explain/instruct, in response to need (clear, immediate student need for help; target student must have this need) (includes clarification of instructions due to student confusion)
Explain/instruct, not in response to need (pre-planned, such as lecture)
Task engagement feedback (due to lack of engagement, or reinforcement for positive engagement)
None (not interacting)

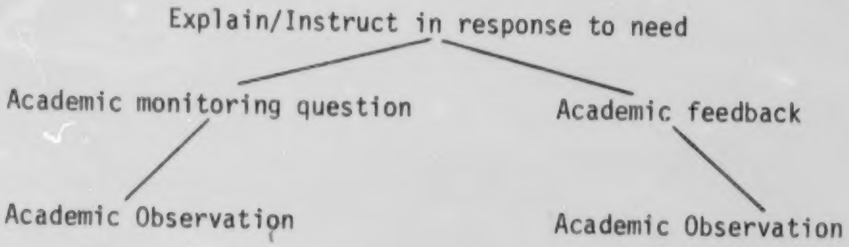
Source - Instructor

Teacher (include other certificated personnel, such as reading specialist)
Other adult (include aide, parent volunteer, etc.)
Student (include older tutor, peer, etc.)

Focus of Instructor Move

Target student
Group as a whole (target student's group or another student therein)

Hierarchy for sequence embedding:


Explain/Instruct in response to need
Academic monitoring question
Academic feedback
Academic Observation
Academic Observation

Other instructor moves (including explain/instruct not in response to need, structure/direct, task engagement feedback, and not interacting) are all separate and non-hierarchical categories (coordinates of explain/instruct in response to need). Note, also, that the coding of the conjoint learner move gives additional sequential information in addition to the hierarchy above and the time-sample sequence of one moment per minute.

When observation is followed by a question, then by feedback, code the question because it came first (was closer to the moment coded). Generally, it can be assumed that there is at least implicit feedback after a question.

Setting. A differentation is made between two general types of settings - seatwork (S) and groupwork (G). In seatwork, the student is working independently on a project. He has reasonable control over the pace of activity. Input from the teacher or another student is at best intermittent. In groupwork, the activity is interactive. What the student does and when he does it depend on the other members of the group. An adult and/or other students are continuously present. Typical group activities are discussion, recitation, or going over materials as a group. This factor is included because it provides an important context within which teacher behaviors operate.

Level of Difficulty

Rather than conceptualize level of difficulty symmetrically, with "Too easy" counterbalanced by "Too hard," we could choose an asymmetrical category system wherein "Very easy" is opposed by "Too hard." The notion here is that we will have difficulty identifying tasks that are so easy that the student cannot learn from them, distinguishing these from tasks that provide useful practice or review. Many of the tasks that are "Too easy" can be isolated in "other reading" or "other mathematics" categories that are reserved for content below the level of the test. This would include copying in the reading domain and counting in mathematics. These activities will either be too easy (time-fillers) to produce learning or else the student must be below the level of our test. In either, case the situation can be characterized in terms of content relative to our tests. Other tasks that might be "Too easy" because a student has mastered them previously will generally serve as practice or review. They will probably always be of some value relative to our tests, perhaps by increasing speed, reducing careless errors, or preventing deterioration and forgetting. Therefore, this type of task must be distinguished from tasks that are at a content level below the tests, where direct effects could not be measured by our tests. In addition, where the student is just reviewing or practicing and has already reached a high level of mastery, we should be able to show this with a high pretest score. Otherwise, the student must have learned a great deal earlier in the term. (Students who top out in the middle of a term might be identifiable according to the amount of "very easy" practice or review that they do in a content area later in the term.)

Given this approach, we would relegate much of the low difficulty task time to the "other" content categories. Content that is definitely test-related could be categorized as "very easy" or "too hard" on the basis of error rates relative to task characteristics. "Very easy" would mean that virtually no errors, other than careless errors, are being made. In addition, this category should suggest that little effort is required of the student. A speed drill of computation (that a student can do easily with no time limits) might require great concentration and produce some errors and/or failure to complete all items. This would therefore not be "very easy" for the student. Similarly, a high inference, open-ended written task with a comprehension content objective might not be "too hard" even though a student is correct on only one out of five items. A straightforward true/false quiz might be "too hard" even though a student is correct half the time.

We should probably allow our observers to use subjective information where this is appropriate, although this kind of information should not be the focus. For example, any behavioral cues indicating the level of student effort on a task might be used to distinguish between borderline cases that are either "very easy" or intermediate. Similarly, the kinds of errors that a student makes may be very useful for determining how close a student is to being ready to learn from a task. Information on error characteristics might be used to distinguish borderline cases in the intermediate "too hard" area.

Instructional Moves to be Recorded

Academic Monitoring Observation

The teacher looks to see how a student is doing on a task. The presumed intent of the observation is to assess the academic performance of the student. No verbal interaction is involved.

Example: Johnny brings his paper to the teacher and he looks it over.

Academic Monitoring Question

The teacher asks a question or requests information from the student in order to assess academic performance.

Example: The teacher asks Johnny to show how he worked a problem. During a discussion, the teacher asks Mary the meaning of a word that has just been defined.

Academic Feedback

The teacher gives information to the student about how s/he is performing. The feedback can be either positive or negative, but it must indicate the correctness of the performance. No direction or explanation is involved.

Example: "Yes, Mary, the word is 'friend'."
"Johnny, this answer is not right."

Explain/Instruct, in response to need

The teacher interacts with a student in order to teach the student new knowledge or skill. The focus is on substantive content. The teacher may provide an explanation, give a demonstration, or ask a student a question intended to contribute information to a discussion or develop understanding. This information processing move is clearly in response to a student need.

Example: During a seatwork assignment on short vowel sounds, the teacher has observed that Sonia is having trouble and goes over the sounds with her. ("'Cot' and 'mop' have the sound /ŏ/; you say /ŏ/.")

During group seatwork on root words and inflectional endings, the teacher has discovered children making errors. He/she reviews the rule on double consonants. ("Remember, sometimes you need to double the consonant...")

Explain/Instruct, not in response to need

The teacher makes a substantive instructional move as above, but with no apparent immediate link to student needs.

Example: In a group lesson on compound words, the teacher talks about what compound words are and gives examples. ("A compound word is made of two words put together" or "Who can find another compound word in your story?")

Structure/Direct

The teacher establishes and maintains an organization and plan of activity. Some structuring statements identify the goal of instruction; others describe the sequence of events for the day. Directing statements define explicit actions for the student to carry out.

Example: At the beginning of the reading lesson, the teacher says, "Today, we are going to study compound words."

After a group math lesson, the teacher says "Do the problems on page 49. When you finish, put the paper on my desk, then work on your spelling."

Task Engagement Feedback

The teacher gives the student feedback about general, task-related behavior but not about correctness of responses. This category includes general directions to engage in work.

Example: "I like the way you are working quietly, Susan."
"Maria, if you keep looking out the window you won't get your work done."
"Bill, get in your seat and go to work."

Not Interacting

This observation system focuses on the target student. From the student's perspective, on any one time sample, the teacher may not be actively involved in the situation. This would most often happen if the student was doing seatwork and the teacher was involved with other students.

Example: Natalia, the target student, is at her desk copying spelling words. The teacher is in another part of the room leading a reading circle.

Observation categories for reading and mathematics.

Reading (grades 2 and 5)

LV	Long vowels	LV
DC	Other decoding	DC
CW	Compound words	CW
WS	Other word structure	WS
CP	Comprehension (text, sentences, phrases, single words; includes understanding directions, sign reading, context clue fill-in, pronoun meaning)	CP
OR	Oral reading practice (includes text, sight words, etc.)	OR
SL	Silent reading practice (includes text, sight words, etc.)	SL
SP	Spelling (student required to write specified words, i.e., no student choice of words to be written)	SP
RL	Other reading-related at test level (grammar, writing with student choice of words, library skills, map reading, etc.)	RL
BT	Copying, learning the alphabet, and other reading below the level of the test	BT

Mathematics (grades 2 and 5)

AS	Addition or subtraction without regrouping (computation without transfer emphasis or format changes) (includes speed tests and family of facts without missing addends)
RG	Addition or subtraction with regrouping (computation without transfer emphasis or format changes) (includes speed tests)
CT	Addition or subtraction transfer items, generally with format changes (computation transfer, patterns, and relationships) (includes missing addends, inequalities, associative property, number patterns such as counting by 2's or 10's, adding constants in a matrix, completion of complex matrices, etc.)
PV	Place value/numeration system (includes ordering higher level numerals)
MU	Multiplication
DI	Division
FD	Fractions/decimals
SA	Spatial application (measurement, volume, geometry, etc.)
VA	Verbal application (word problems, graphing)
RL	Other mathematics at the test level (money problems, time problems, etc.)
BT	Other mathematics below the level of the test (writing numbers, counting by ones)

(Note: content categories are likely to differ by grade after further development. For example, it is likely that multiplication that is below the test at grade five would not be below the grade two test.)

(Note: to be used with "focus" coding of the particular task or "sub-task" of the moment)

(Note: tasks where the content shifts back and forth between categories will be coded in terms of the content of the moments sampled)

Appendix B

Observer's Manual

OBSERVER'S MANUAL

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I. Overview of the observation system.

Model of classroom learning. The purpose of this observation system is to provide a description of some fundamental instructional events, with the intention of demonstrating a relationship between these events and student learning. The observation system is based upon a model of classroom learning that is centered on the student. This model suggests that the relationship between activities carried out by a teacher and learning attained by a student can only be understood in terms of student behaviors. This is due to the fact that the immediate cause of student learning must be student behaviors, not the activities of the teacher. Therefore, the teacher's activities can only influence student learning indirectly, through the intermediate student behaviors.

Studies of teaching have often attempted to relate teaching activities directly to student learning. Observation has been conducted to measure teacher activities and tests have been administered to measure student learning. Usually it is assumed that the teacher's activities are distributed equally among all students in a class. In addition, it is generally assumed that a given activity is equally appropriate for each student in the class.

The observation system to be explained here is designed to describe a teacher's activities in terms of the particular student or students to whom those activities pertain. For example, rather than simply describing how often a teacher asks questions of students in general, this system describes how often the teacher asks questions of a given student. More importantly, the system also describes what that student is doing at the time of the teacher's question. Using this system, it is possible to examine the appropriateness of the teacher's question in terms of the ongoing student behavior to which it is related. In addition, it is possible to examine the effects of questions in terms of changes in student behavior that occur later. Finally, the effects of different student behaviors can be examined in terms of the learning that occurs during the period over which the behaviors take place. This learning is measured by testing student knowledge both before and after the observation of student behavior. Changes in student knowledge are attributed to the student's behavior between the two testing periods. The student's behavior is attributed to the teacher's activities during the same period (between tests), in addition to other variables, such as classroom characteristics and entering student characteristics.

This observation system is designed to be used in conjunction with tests of student knowledge in reading and mathematics. Therefore, one of the most important features of the observation is the determination of when a student behavior involves an activity (or a task) that is relevant to the learning of reading or mathematics. In addition, when the student activity is relevant to reading or mathematics, the observer must identify the particular subcategory of reading or mathematics to which the activity is most closely related. In this way it is possible to describe the student who is involved in many reading activities that are closely related to the various categories of test items used to measure knowledge of reading. That student can then be distinguished from another who might be involved in an equal quantity of reading activities, but not in reading activities closely related to the particular test items administered.

A second domain of student behavior is the intensity with which the student is involved (or engaged) in a given activity. This can range from a highly intense concentration on the activity, to the complete absence of mental involvement in a designated activity. The procedures of this manual require only that the observer distinguish the presence and absence of at least a minimal level of student involvement in the activity at hand.

A third domain of student behavior is the level of success with which the student carries out an activity. This can also be conceived in terms of the difficulty of the activity for a given student. Clearly, it is possible for a student to be intensely involved in an activity that is directly relevant to some area of measured learning, despite the fact that no learning actually occurs. Many complex models might be used to explain different possible causes for this lack of learning. A relatively simple model will be incorporated here. That is, if the student has previously mastered the learning activity at hand, then she/he cannot show further measured learning in terms of that particular activity, regardless of how much intense involvement the student maintains in the activity. Similarly, if the student is so unprepared for an activity that she/he is totally unable to carry out any aspect of it correctly, then she/he will not learn by performing the activity. On the contrary, repeated incorrect performance of an activity could result in "negative" learning, where the student learns the incorrect responses. The procedures to be described in this manual require that observers distinguish between three levels of difficulty of a given task for a given student. These three levels of difficulty do not correspond directly to the absolute presence or absence of learning in the sense of the preceding discussion. However, the categories of difficulty to be identified by observers should show a probabilistic relationship with learning based on the logic of the preceding discussion. (See the explanation of difficulty levels, later in this manual.)

Additional features of student behavior are also examined using this observation system. These include determinants of the pacing of the learning activity, the response mode of the student when actively engaged in an activity, and categories for student behavior to be used when the student is not engaged in the designated learning activity. However, the core of the observation system revolves around the three domains discussed above: 1) the relevance of the student activity to reading and mathematics outcomes, 2) the presence or absence of student engagement in the activity, and 3) the general level of difficulty of the activity for the student.

As stated previously, the observation system will be used to describe the teacher's activities in terms of the individual students and student behavior to which the teacher's activities pertain. Teaching behaviors will be analyzed in terms of both the concurrent student behavior, subsequent student behavior, and student learning over the period of observation.

The model of classroom learning, upon which this observation system is based, views teaching activities in terms of two domains: 1) planning activities, and 2) interactive activities. Planning activities consist of the diagnostic and prescriptive behaviors that determine how instruction will take place. Planning activities are generally not observable, insofar as they occur "inside the teacher's head". Therefore, this domain of teaching behaviors will be assessed primarily with interview and questionnaire procedures, simply asking the teacher to explain how she/he plans instruction. Planning activities will not be observed.

The second domain of teaching activities, interactive behaviors, consists of instructional moves carried out in the classroom. These will be assessed by direct observation. This observation will focus on the way in which the teacher provides explanations, feedback on the correctness of student responses, monitoring of student learning, and control of student behavior. Observers will code not only the instructional moves of the teacher, but also those of other adults and students who provide instruction. In addition, feedback provided by curriculum materials will be coded. These different sources of instruction will each be distinguished so that it will be possible to analyze their relative effectiveness. Observers will also differentiate between instructional moves that focus on the individual student being observed and moves that focus on a group of which the individual student is a member. This will allow for a rough dichotomization of instructional moves in terms of the extent to which they are designed for the needs of an individual student as opposed to the needs of a group to which she/he belongs. In addition, it is likely that the student will show a higher level of attention to instructional moves directed to him/her alone.

Observation procedures. The basic system for observing and coding the student and teacher behaviors discussed above is a "time-sampling" procedure. Time-sampling involves the observation of a single "moment" within a longer period of time. The moment is described according to the observational categories that best describe the "event" taking place at that moment. These categories are then attributed to the longer period of time from which the moment was sampled. Hence, if the observer samples a moment during which a student is doing mathematics seatwork while the teacher provides him/her with feedback, then the appropriate codes for this event are recorded within the time period of that sampling. If that time period is four minutes long, then four minutes of mathematics seatwork with feedback from the teacher will be assigned to the student for the purposes of data analysis. It is likely that some sampling error will occur using this procedure. In the example cited above, the seatwork and feedback may not have continued throughout the entire four minute period. However, it can be expected that such errors will cancel out when a very large number of moments are sampled and averaged together.

In addition to sampling moments in time, the system involves the sequential sampling of six "target students" (sometimes described as "identified students") during each "cycle" or time period. That is, during the four minute period in the example above, moments would also have been sampled for each of five other students who had been previously identified as target students. One sampled moment for each of the six target students constitutes a complete cycle. This cycle determines the time period to which each of the sampled moments is attributed. Target students are sampled according to a previously specified sequence. The observer must systematically sample each target student's moment immediately after completing the coding for the previous target student in the sequence. This procedure minimizes the possibility of observer bias in the sampling of moments.

It is essential to this observational system that all categories coded for a single event (one sampled moment) be interrelated. For example, if a student is coded as not engaged, then she/he must be "not engaged" in the content area that is coded for the same event. Similarly, if the coding indicates that the teacher is providing an explanation to the student, then that explanation must pertain to the content area that is also coded for that event. This procedure greatly expands the levels of analysis that can be conducted with data collected by this system. It allows for the analysis of complex interactive patterns of student and teacher behavior, rather than requiring the analysis of each observational category separately.

II. Outline of observation categories.

The following is a list of the observation categories to be used with very brief descriptions of each. This outline is to be used only for an initial overview and for quick reference. Complete explanations of these categories appear later in this manual.

General Content Categories

(General content includes periods other than reading or mathematics instruction. Any event that is coded in a general content category is not coded for any other categories, such as student and teacher behaviors.)

W = Wait

Wait refers to periods of no activity and no movement between activities. This would often occur when a student finishes his/her work early and no other activity is initiated.

T = Transition

Transition refers to periods of change from one activity to another. This might include lining up, taking seats, or quieting down before the next activity.

M = Management

Management refers to the conduct of class business that is unrelated to any instructional activity. This includes such things as the collection or distribution of milk money and making arrangements for a field trip.

B = Break

Break includes any recreational or free period, such as recess, unstructured P.E., lunch, milk breaks, and leaving class to use the restroom.

N = Nonacademic instruction

Nonacademic instruction refers to a wide range of organized classroom activities that do not fall within a fairly narrow domain of academic instruction. Nonacademic instruction includes flag salutes, sharing, storytime, music, art, and structured P.E.

O = Other academic instruction

Other academic instruction refers to academic instruction other than reading and mathematics. This includes social studies and science (where there is no reading or mathematics content).

blank circle (between "O" and "DC" in the seventh column) = Absent

Reading Content Categories:

(The reading content categories correspond generally to categories found in the Reading Glossary for the daily logs at grades 2 and 5. The same observational categories are used at both grades. Therefore, some available categories will be observed primarily at one grade or the other).

DC = Decoding

WS = Word Structure

CP = Comprehension

WM = Word Meaning

PT = Practice, reading

SP = Spelling

RR = Reading Related

Reading related includes other reading content that is at or above the level of the tests to be used. Library skills would be coded RR.

RB = Reading, Below the test level

Reading below the test level includes other reading content that is at a lower level than the tests that will be used. Copying or handwriting would be coded RB.

Mathematics Content Categories:

(The mathematics content categories correspond generally to categories found in the Mathematics Glossary for the daily logs at grades 2 and 5. The same observational categories are used at both grades. Therefore, some available categories will be observed primarily at one grade or the other.)

AS = Addition and Subtraction with no regrouping, using the standard short form

RG = Regrouping, addition and subtraction using the standard short form

CT = Computational Transfer

PV = Place Value

Place value includes addition and subtraction without or with regrouping where an instructional algorithm involving a place value transformation is used.

MU = Multiplication

DI = Division

FR = Fractions

SA = Spatial Application

Spatial application includes geometry, measurement, and graphing without word problems.

VA = Verbal Application

Verbal application includes word problems.

MR = Mathematics Related

Mathematics related includes other mathematics content that is at or above the level of the tests to be used. Decimals would be coded MR.

MB = Mathematics, Below the test level

Mathematics below the test level includes other mathematics content that is at a lower level than the tests that will be used. Developmental activities such as learning to count up to ten would be coded MB.

Setting Categories:

S = Self-paced

Self-paced includes activities where the student works at his own pace (such as seatwork).

O = Other-paced

Other-paced includes activities where the student must work at the pace of other students (such as group activities).

Difficulty Level Categories:

E = Easy

Easy includes review and practice. Few errors are made and little effort is required of the student.

M = Medium

Medium difficulty includes any activities between "easy" and "hard."

H = Hard

Hard includes those activities that the student cannot carry out. Many errors and few correct responses (about what you would expect by chance) occur.

Learner Moves:

(Learner moves coded must be those of the target student being sampled.)

EW = Engaged, Written response

EO = Engaged, Oral response (statement or question)

EC = Engaged, Covert response

Engaged, Covert responses includes any student response that is generally not observable. This includes most activities where the student is simply thinking, such as listening to the teacher or reading silently.

ED = Engaged, Directions

The above categories for engaged learner moves must involve the substantive content of the reading or mathematics coded. Engaged, directions includes any written, oral, or covert student response that involves only the directions to the reading or mathematics activity.

NI = Not engaged, Interim activity

Not engaged, interim activity refers to the nonacademic interim tasks that are part of a reading or mathematics task. This includes sharpening pencils, turning in and passing out papers, and getting books.

NW = Not engaged, Waiting for help

Not engaged, waiting for help refers to periods where the student has stopped working on a reading or mathematics task because he is waiting for help.

NO = Not engaged, Off-task

Not engaged, off-task refers to periods where the student is inappropriately disengaged from a reading or mathematics task. This would include socializing, daydreaming, and misbehavior during a reading or mathematics task.

Instructor Moves:

(An instructor move is coded only if it is received by the target student and is therefore relevant to the behavior coded for the target student at that moment. For example, if the student continues to work on a reading assignment while the teacher gives instructions to get out the mathematics text, then the student engagement in reading is coded, with no instructor move for that student.)

AO = Academic Observational monitoring

Academic observational monitoring consists of the instructor looking at or listening to a student response during a reading or mathematics task.

AF = Academic Feedback

Academic feedback refers to the teacher informing the student that a written or oral response was correct or incorrect. Any explanation is more than academic feedback.

AQ = Academic Question

An academic question consists of the teacher asking the student for a written or oral answer.

EN = Explanation, Need

Explanation, need refers to instructional explanation provided to the student to satisfy a clear and immediate student need for help.

EP = Explanation, Planned

Explanation, planned refers to instructional explanation provided according to previous plans of the instructor. This would include lectures. Explanation, planned may involve a general student need, but not an immediate student need.

SD = Structure or Direct

As with the other instructor moves, this move must be relevant to the reading or mathematics task coded at the same moment. Structure or direct refers to statements of goals or objectives and the provision or instructions or directions.

TE = Task Engagement feedback

Task engagement feedback refers to the instructor's moves to control inappropriate student behavior, such as off task behavior, or to praise appropriate behavior, such as good work habits. However, inappropriate and appropriate student behavior does not refer, here, to correct and incorrect responses to a reading or mathematics task. Teacher feedback for these responses would, as discussed above, be coded AF.

Source of Instructor Move:

T = Teacher

Teacher refers, here, to the instructor in charge of the class unit in which the observation takes place. This might be a reading or mathematics specialist during the student's reading or mathematics laboratory period.

O = Other adult

Other adult refers to an instructor who is not in charge of the class unit. This might be an aide or parent volunteer.

S = Student

Student is coded as the source of instruction when the target student is receiving instructional assistance (usually tutoring) from another student.

C = Curriculum

Curriculum is coded as the source of instruction when answers provided in the curriculum materials are used by the student to obtain academic feedback. Therefore, the source code, C, is used only with the instructor move code, AF.

Focus of Instructor Move:

T = Target

The target student is the focus of the instructor move only when that move is directed specifically to that individual target student.

G = Group

A group is the focus of the instructor move when the target student of the moment is in a group (two or more) that receives an instructor move. The group is coded when the instructor move is directed to the group as a whole or to some student in the group other than the target student (so long as the move is relevant to the target student).

III. General procedures for observation.

Target student recognition. The first task for the observer is to learn to identify each target student by name. This can be done during the week of the "A" testing and the Planning Interview. When visiting classes during that week, it is advisable that observers memorize the names of target students before visiting classes. This should facilitate the pairing of names and faces while giving the "A" test.

It will only be possible to follow the above procedure in four of the eight classes to which each observer will be assigned. It will be necessary to memorize target student names for the other four classes and pair names with faces before the start of class on the first day of observation. This is not easy, but can be accomplished with the aid of the teacher. In addition, it may be helpful to get a verbal description of each target student from the field worker who did the "A" testing in the class.

As a means of insuring that verbal descriptions of target students are available to all observers who may be assigned to a class (including substitute observers), field workers must prepare the best possible written description of each target student at the time of the "A" testing. These can be duplicated and put on file at Far West Laboratory.

One other useful procedure to aid in learning student names is to ask the teacher to put name cards on each student's desk. However, be certain that this is done for all students in the class, not just the target students. Also, do not expect to rely entirely on name cards. Students will get up and move around the room, sometimes even going to another room, so the observer must quickly learn to identify each target student by name and face.

Familiarity with class organization. It is also important that observers have some familiarity with the organization of reading and mathematics instruction in a class before observing it. This can be obtained from the information collected with the initial interview and the questionnaire. Observers should be aware of any possible complications, such as students leaving for a reading laboratory or some other special instruction. The interview and questionnaire information will be kept on file at Far West Laboratory.

Avoiding communication with students. Another procedure that should be followed during observation is the avoidance of communication with any students. In fact, it is usually advisable to concentrate on the observation and coding so intently that eye contact with students is avoided. Students will tend to ask observers for help with their work, or will ask about what the observer is doing. Observers will find that they do not have time to help students and code observations simultaneously and that a student who has been given help once will expect to receive it whenever it is requested thereafter. It is less distracting to provide terse explanations of what the observer is doing, but even this presents problems when the student is not satisfied with a terse statement and demands elaboration. For these reasons and others, the simplest and most reliable procedure is to concentrate on coding observations and avoid even eye contact with students. The routine response to any student question should be either no response or the statement that both you (the observer) and the student have work to do and should not be talking.

Outside of the classroom, it is possible to maintain a more cordial relationship with the students. However, it is extremely valuable to set the standard of no communication inside the classroom. Students will recognize and accept this distinction.

It should be noted that the avoidance of communication with students is often impossible for the purpose of conducting valid observation. For example, it may be necessary to ask a student where she/he is going or where she/he has been. In addition, it may be necessary to ask a student to try a problem in order to determine the difficulty level of a task for the student. These cases will be discussed further below.

Observing students in different rooms. As pointed out above, students will often leave the classroom during observation. This is a common problem with which the observer must be prepared to deal. When all the target students leave at once and go to the same destination, then the observer simply follows. This presents no problem. However, there will be many instances where some target students leave and others do not, or where all target students leave but they go to two or more destinations. Observers must always prepare for these possibilities before observation. The best way to prepare is to study the interview and questionnaire information available, to talk with the teacher about these possibilities, and to talk with other field workers who have been to the class. The most common cases of target students going to different rooms will be routine patterns of the instruction. The observer should always investigate these in advance.

When one or more target student leaves and the observer has no prior information regarding where the student is going, the observer should ask the teacher, the target student, and/or other students in the class, in order to determine where and for what purpose the target student is leaving the classroom. It is a good idea to ask one or more sources (especially the target student him/herself) even when the observer has prior information. This verification of prior information is especially important the first one or two times the observer is in a class.

If target students are separated and the observer has determined where each of them is and what they are doing, then the observer must decide how to conduct observation in that situation. It is not necessary to follow and observe directly any target student activities other than those involving some task relevant to reading or mathematics. (Any task relevant to reading or mathematics is coded as reading or mathematics, regardless of what the task may be called.) Therefore, when a target student leaves the room to use the restroom (break) or to run an errand at the office (management), the observer does not need to follow the student to observe these activities directly. However, when the student leaves to practice in a play (nonacademic instruction), to attend a music class (nonacademic instruction), or to attend a science laboratory (other academic instruction), then the observer must determine whether or not any task relevant to reading or mathematics is conducted. This can be done in advance, by talking with the instructor in charge of that activity and/or the target student who will attend. However, it is advisable that the observer check with a brief, direct observation on at least one occasion to verify this information. This can usually be accomplished in a few minutes, without seriously interrupting the ongoing observation of the other target students.

When one or more target students leave for a reading or mathematics related activity, then the observer must observe directly, once per cycle if at all possible. Generally, this can be accomplished within the six minute limit for event cycles. In addition, observers will sometimes find that an activity described as reading or mathematics related is not coded as reading or mathematics under this observation system.

For example, a language arts laboratory may often involve the conceptualization of ideas for stories, with drawing rather than reading or writing. In such a case the observer need only observe directly on an intermittent basis, just to insure that no other task has been initiated. Once at the beginning and once at the end of such a language arts period may often provide sufficient observation to generalize that the entire period can be coded as nonacademic instruction (assuming that it is equivalent to art).

In some cases intermittent observation may suffice for activities relevant to reading or mathematics. For example, when students go to the library they often spend all their time looking for books and no time actually reading. This would be coded as practice, reading content, a self-paced setting, a medium difficulty level (assuming that the books selected appear to be of medium difficulty), and a not engaged, interim activity learner move (selecting books to be read later). If it is impractical to observe this activity once per cycle, then one observation near the beginning and another near the end of the period may be sufficient.

Note that even with intermittent sampling for a target student, that student's assumed activity must be coded once per cycle.

Sampling moments. Observers should use a mechanical, rigid sequencing procedure for sampling moments to be coded. Target students should be observed in the same order throughout observation. This ordering may be determined according to practical considerations, such as the homeroom seating pattern. However, once an order has been determined, it should not be changed. During coding, the observer should sample a moment for a target student immediately after completing the coding for the target student in the sequence. The first "picture" observed for a target student, upon looking up from the coding for the previous target student, must be the moment coded. The observer "takes a mental photograph" of that moment, thereafter determining how it should be coded. This kind of procedure is necessary to minimize observer bias in the sampling of moments. Distinct events often take place in a rapid sequence. Unless the observer follows a very rigid sampling procedure as outlined above, confusion will often arise in determining which of several events should be coded.

Investigating the moment sampled. It should be noted that once the observer has sampled a moment, storing a mental photograph of that moment, then it is possible to conduct brief observation thereafter to determine what coding categories best describe that moment. That is, the observer can thereafter walk over to examine the page that the student was working on, determining its content. If this distracts the student and she/he looks up at the observer, then the observer simply ignores the fact that the student is no longer engaged in work on that page. The student was engaged during the moment sampled, so that behavior is coded.

It is particularly useful for coding engagement that moments be sampled from a distance so that the student is not distracted. Thereafter, the observer can approach the student without concern for disrupting the natural behavior to be observed.

Whereas engagement is best observed from a distance, other variables must be observed from a position near the target student. These include the content of the task on which the student is working, the difficulty level of that task for the student, and the kind of instructional move that the student is receiving at that time. It may be necessary to approach the student and look carefully at a page in order to categorize content. The observer may have to examine several written responses of the student in order to determine the difficulty level for that student. It may be necessary to move closer and listen for several seconds in order to categorize an oral statement of the teacher to the student (an instructional move).

In a few special cases, it may be necessary to conduct some investigation well after the observation of a given moment, in order to categorize that moment. For example, an observer may be unable to categorize content without further information. In such a case, the observer could delay coding that content until after consulting with staff members at Far West Laboratory. In other cases, it may be impossible to determine difficulty without asking the student to read a passage aloud or to try a mathematics problem. (In the latter case the student may have stopped working and the observer believes that this could be due to the high difficulty of the task, but previous information is insufficient to allow this conclusion. The observer would therefore have to ask the student to try a problem.) If the student cannot be asked to read a passage or try a problem immediately (that may be too disruptive), then the observer might wait until a later time, such as a recess, to ask the student to perform the task.

In all cases, it should be clear that the moment to be coded is the one that was sampled initially. The subsequent observations are carried out simply to determine what that moment really was.

Attending to non-target students. It is clear from the discussion above that the target student will be aware that they are the subjects of observation. However, observers should minimize this awareness as much as possible. The avoidance of eye contact, in addition to its previously discussed advantages, will help reduce the extent to which target students feel self-conscious. In addition, it is helpful to keep the observation sheet out of the view of any students. This will prevent students from reading the names of target students written on the op scan sheet. However, the best procedure for reducing target student awareness of the observation is to attend to non-target students. Observers can do this in two ways. First, observers can focus on non-target students whenever there is no need to observe target students. This will occur during long periods that fall into one of the general content categories, because these categories do not require the coding of any of the other categories. This will often be true during breaks, nonacademic instructional periods, and other academic instructional periods. These require only a single code (B, N, and O, respectively) and may continue without change for a relatively long time. This presents the opportunity for the observer to examine the behavior and work of non-target students in the same way that the target students have been observed. In addition, there is a three minute minimum duration for observation cycles (see below). Therefore, observers can examine non-target students even during reading and mathematics periods at those times when the observational cycle is completed in less than three minutes.

The second way to attend to non-target students is to examine aspects of their activities that are identical to those of one or more target students, using the information to code target student behavior. This is often possible when coding reading and mathematics content categories. For example, if the observer needs to determine what content category is appropriate for a given page in a workbook, it may be just as practical to examine a non-target student's workbook as it is to examine a target student's workbook.

Codes interrelated within events. When a moment is sampled, the observer must determine what single event, consisting of interrelated coding categories, occurred during that moment. No two unrelated codes should be used for the same event. Examples of this were given in the overview of the observation system (see above). However, this is a crucial procedure that warrants reiteration. The content, setting, difficulty level, learner move, instructor move, source, and focus must all be interrelated. That is, the learner move and instructor move must both apply to the content coded and to each other. Therefore, if the teacher is explaining a mathematics assignment while the student works on a reading assignment (ignoring the teacher), then there can be no teacher behavior coded. The target student behavior must be coded, and the ongoing teacher behavior is unrelated to that student behavior. If the teacher's explanation or directions for mathematics are coded for the same moment at which the student is coded as working on reading, then it would appear that the teacher was explaining or giving directions to the reading. It is the student that is the core of this observation system. Therefore, his/her behavior takes precedence over that of the teacher.

It is possible, however, that the student could ignore the teacher's behavior, without causing that behavior to be unrelated to the student behavior. If the student is simply not engaged, off-task (perhaps drawing pictures), while the teacher explains a mathematics assignment, then the student can be coded as not engaged in the teacher's explanation of the mathematics.

As mentioned above, the first principle for identifying the event to be coded is that of centering the observation on the student. The second principle is to center the observation on reading and mathematics content. Therefore, in the first example above, the observation centers on the student and on the reading task in which the student is engaged. In the second example, the observation centers on the student and on the mathematics instruction in which the student is not engaged. The lack of engagement in mathematics takes precedence over the engagement in art (the student draws instead of listening to the teacher). The observation centers first on the student. This presents the choice of coding either engagement in art or the lack of engagement in mathematics. Mathematics takes precedent over art, so the lack of engagement is coded.

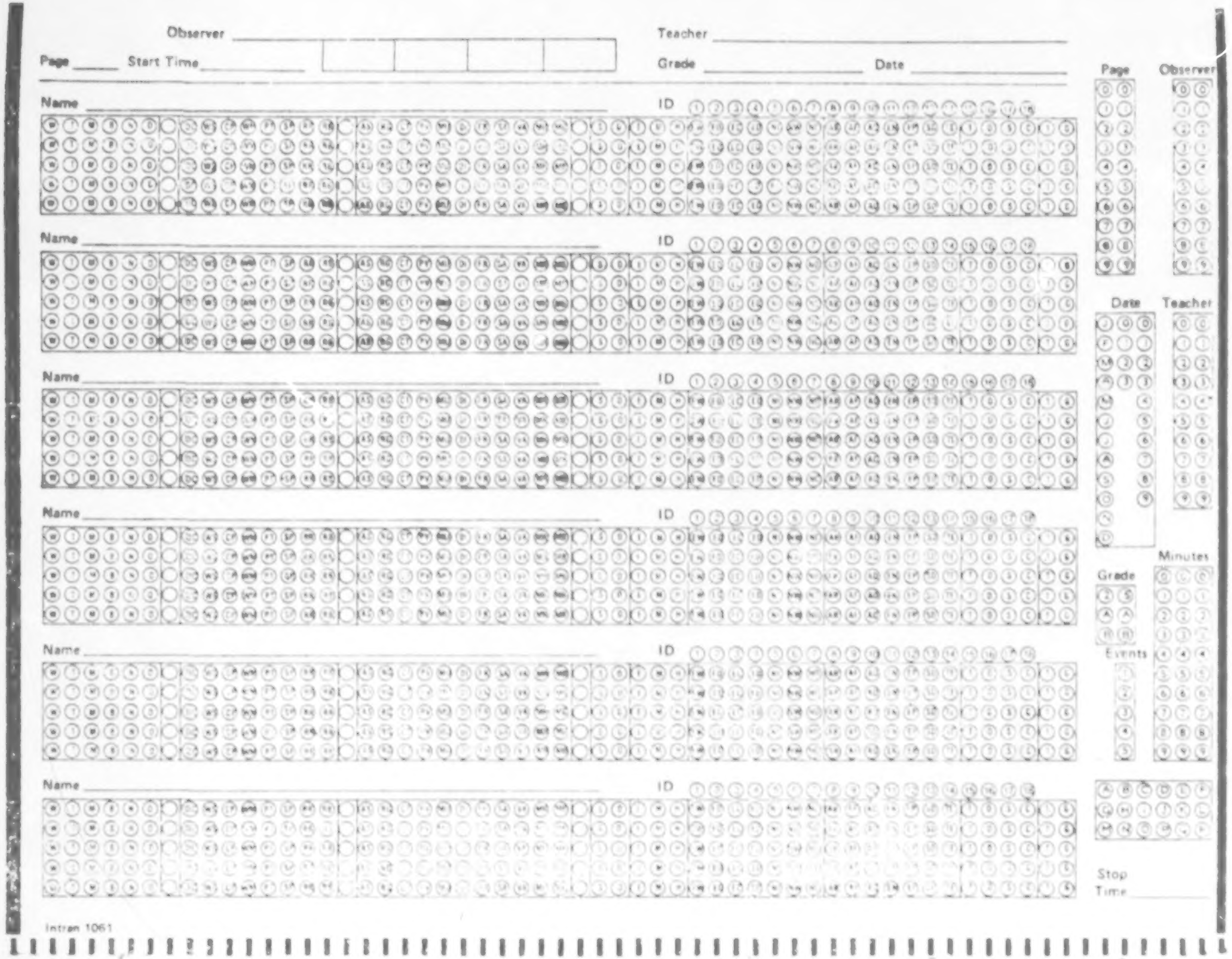
It should be noted that the decision is not always so simple. It may not always be clear that the teacher expects the student to attend to the mathematics instruction. In such a case the observer must make his/her best judgements as to whether the student is really expected to listen to the mathematics instruction, or whether the teacher has accepted the drawing as a legitimate activity. These ambiguous situations will be uncommon. Generally, the student would be coded as not engaged in mathematics. Further discussion of this procedure appears below, under the explanation of the general content categories.

Multiple moments sampled with one event. It is possible to sample several moments from the same event. This will occur for relatively long events. For example, if the teacher takes a student aside for special tutoring over a period of twenty or thirty minutes, then that event would be sampled for each of several cycles. In fact, this will be common. Whenever a relatively stable activity occurs, it is likely that the same event will be sampled repeatedly on successive cycles. This provides the observation system with a rough estimate of the duration of events. Shorter events will tend to be sampled on only one cycle at a time. Longer events will tend to be sampled on several consecutive cycles at a time.

Cycle duration. One cycle (sampling one moment for each of the six target students) should require no more than six (6) minutes and no less than three (3) minutes. The average duration of cycles over an observation day should be about four (4) minutes.

Op scan sheets. Most of the information recorded on the op scan sheets is coded by darkening the small circles with letters or numbers within them (see sample op scan page, following). However, some information can be written out on the sheet, as an aid to the observer. Spaces are provided for writing all of the identification information (observer, teacher, grade, date, page, and the name of each target student). This allows the observer to write this information in quickly, using any abbreviations desired, so that the coding of ongoing events will not be delayed. The more cumbersome coding of the op scan circles for the identification information can be completed at the end of the observation day.

In addition, space is provided for writing out the "start time" and "stop time" for each op scan sheet. At the end of the day the observer must calculate the number of minutes represented by each page, using the notation of start and stop times. The number of minutes for each page is coded in the op scan circles within the box labeled "minutes", on the right hand side of the sheet



Observer ____________________ Teacher ____________________

Page _____ Start Time ____________ Grade ______________ Date ______________

Name ____________________ ID ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱

Name ____________________ ID ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱

Name ____________________ ID ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱

Name ____________________ ID ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱

Name ____________________ ID ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱

Name ____________________ ID ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭ ⑮ ⑯ ⑰ ⑱

Page

Observer

Date

Teacher

Grade

Minutes

Events

Stop Time ____________

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At the top of the op scan sheet there are four boxes next to the line for "start time". These boxes should be used to write the time at which each cycle starts, except the first cycle (for which the starting time is written on the "start time" line). The starting time for the second through the fifth cycles is not used for any data analysis, so it does not need to be coded in any op scan circles. However, these starting times are useful to the observer so that she/he can monitor his/her cycle time and keep within the six minute maximum, the three minute minimum, and the four minute average.

Events are coded in rows within the boxes for target students. There are six such boxes on the op scan sheet, with five event rows per student. The op scan codes in each row correspond to those given previously in the outline of observation categories. During each cycle the observer fills out one row for each student.

The number of events observed for each target student on the sheet is coded in the box labeled "events". The number of events must be the same for each target student on an op scan sheet. The total number of minutes for the page will be divided by the number of events to determine the average number of minutes per cycle for each op scan sheet. Therefore, it is important that an equal number of events appear for the students on a given op scan sheet. The number of events per sheet can be coded at the end of the observation day.

Usually, there will be five events coded for each student on an op scan sheet. However, this will not always be the case. For example, at the end of the school day the observation may end with fewer than five events on a page. Also, during a long break period (such as lunch) it is not necessary to repeat the break code every six minutes for the entire period. Rather, it is easier to simply code a single break event on a separate page, recording the start and stop times for the break on that page. It is important to follow this procedure only for that portion of the break that applies to all students. If students leave or return at different times, then it will be necessary to conduct the normal repetition of sampling cycles at the beginning and end of the break period. However, a single break cycle on a separate sheet can be used to code the longer middle portion of the break. This procedure can also be applied to nonacademic instructional and other academic instructional periods.

The observer must be careful to always code the same number of events per student per sheet, even when this appears inefficient. For example, if one student stays in the room finishing a mathematics assignment after the other students have gone to lunch, then the repetition of sampling cycles must be completed for all the target students. The student who stays late will be coded as working on mathematics, while the other students will be coded as being on break. If a student stays late at the end of the school day, then a separate op scan sheet should be used for the time during which that student is working and the other students have left the school. In this case, events would be recorded only for that one student because there is no code for students who have left school.

There are several op scan circles that should not be used. These were added simply to allow for the inclusion of data that may not have been considered at the time that the op scan sheets were designed. These circles are the three blank circles in each of the thirty event rows on the page and the eighteen circles coded with the letters "A" through "R" in the box at the lower right hand corner of the sheet.

Checklist. At the end of the observation day, the observer should refer to the checklist for coding-error control (see section V of this manual). In addition to completing all identification codes, minutes codes, and event number codes, the observer should review this checklist and his/her op scan sheets, looking for coding errors. For example, the observer should check to see that an equal number of events are coded for each student on each op scan sheet. The observer should also check to be sure that no impossible category combinations have been coded, such as breaks with learner moves, or decoding without a learner move. In addition, the observer should check to be sure that all the obvious events of the day have been coded accurately, such as recess and lunch periods. These errors can seriously confuse the naïve computer. They can be checked most efficiently immediately after observation, when the events of the day are relatively fresh in the observer's mind.

IV. Explanation of observation categories.

IV. A. General content.

General content codes are used to provide a basic description of the activities, other than reading or mathematics, that take place during the school day. It is important to note that this refers only to activities having no instruction relevant to reading or mathematics. (An activity may involve reading or mathematics without being designated by the teacher as a "reading" or "mathematics" task.)

Seven categories are reserved for the non-reading or mathematics activities (general content). These are wait, transition, management, break, nonacademic instruction, other academic instruction, and absent. The purpose of coding time in these categories is to obtain a description of how the class day is organized. Of particular interest are considerations related to the efficient use of time and the extent to which variety and diversion are built into the daily schedule.

The first three of these categories, wait, transition, and management, are expected to have some relationship with the efficiency of classroom operations. If any one of these categories occurs in excess, then it is probably an indicator of the inefficient use of time. However, some time should be expected to fall into these three categories in any normal classroom.

The next three categories in this group, break, nonacademic instruction, and other academic instruction, should be related to the variety of activities conducted during a day and the extent to which a student is allowed recreation and other diversions. A break is considered a completely recreational period, allowing the student to relax between instructional periods. A nonacademic instructional activity demands more of the student's concentrated attention and effort then does a break, but still provides some diversion from the demands of reading and mathematics tasks. Instruction involving music and art are included in this category not because these are necessarily "nonacademic" subjects, but because they are relatively more relaxed and entertaining than reading and mathematics instruction in most second and fifth grade classes. Other academic instruction, however, is generally as demanding (and perhaps tedious) for the student as are reading and mathematics. Therefore, other academic instruction does not usually provide the student a relaxing diversion from work on reading and mathematics.

Many assumptions underlie the foregoing discussion of the six general content categories. Analyses of the data to be collected with this observation system may demonstrate other relationships than those suggested above. However, these relationships are described to give the observer some idea of the kinds of hypotheses that might be investigated using data based on these categories.

No setting, difficulty, learner move, instructor move, source, or focus need be coded during any of the seven general content activities. Therefore, if W, T, M, B, N, O, or blank (absent) is coded, then no other code should be used in the same op scan row. This procedure is followed because these categories exclude instruction related to the learning of reading or mathematics so that no information is considered necessary on details describing the conduct of this instruction.

Obviously, the observer's task is greatly reduced during any of these seven general content activities in that only one code is required for each event. In addition, when one of these activities occurs over a long period of time for all six target students, then the observer may depart from the three to six minute time limitations for observation cycles. This will often be possible during long breaks, nonacademic instruction, or other academic instruction. During these periods the observer may simply code the entire period as one event on a separate page. The start and stop time would encompass the entire period during which all six target students were involved in the activity. This procedure prevents the single long event, which would be as much as one hour, from being averaged with the three to six minute events of the normal sampling. It is important that the coding of a single long event encompass only that portion of the period during which all six target students were involved in the activity. Therefore, if a single target student stays in the class to complete an assignment during the first five minutes of a lunch break, then the observer must continue the normal coding cycles for all six target students. The other five students would be coded for the lunch break, while the single student would be coded for working on the assignment. Only after that student goes on lunch break can the observer start a separate page to code a single break for all six students. In addition, the stop time for that single break coded on a separate page must be entered when the first student returns from the lunch break. At that time the observer starts a new page, coding the normal three to six minute cycles with the appropriate activity codes for students who have returned from lunch and the break code for those who have not yet returned.

It is important to note that reading and mathematics content are given priority over the six general content categories, in terms of coding the activity in which the student is actually engaged. If the teacher is conducting one of the six general content activities (and expects all students to be so engaged), but a target student is actually engaged in reading or mathematics, then the observer should code the target student as engaged in the reading or mathematics. However, if the teacher is conducting reading or mathematics (intending that all students be engaged in that instruction) and a given target student is actually engaged in one of the general content activities (perhaps doing artwork), then the observer should code the target student as not engaged in the reading or mathematics instruction (rather than coding the nonacademic instruction, artwork).

The first general content category on the op scan sheet is wait (W). This refers to periods of no activity and no movement between activities. This often occurs when the target student finishes his/her work early and no other activity is initiated. The student may either sit quietly or socialize with a neighbor. In either case, wait is coded because the student has no activity to perform and is not in transition to an activity.

A wait period is terminated when another activity, or a transition to another activity, is initiated. This initiation can be carried out by either the teacher or the student. The teacher can initiate a new activity by simply giving the directions that a new activity will be started ("Get your math books out"). The student can initiate a new activity by actually becoming involved in that activity. He/she may take out a book and begin reading or may simply draw pictures. In the first case reading practice would be coded, while in the second case nonacademic instruction (art) would be coded. Transitions to new activities are usually initiated by the teacher. (See the discussion of transitions below.)

It should be noted that wait is not coded when the student is waiting for the teacher to continue the activity. That is, a temporary delay of the activity (such as when the office calls the teacher regarding an administrative concern) is not considered to be a termination of the activity.

Therefore wait is not coded, because there is a continuing activity. That activity is coded. If the activity is reading or mathematics, the learner move, not engaged-waiting, is also coded.

The second op scan code is transition (T). This code is used for periods of change from one activity to another. Hence, whenever students must move from one location to another because a subsequent activity occurs in a different place than did the prior activity, then transition is coded. Transition also includes time required to quiet students between activities, because students generally tend to get more noisy after one activity ends and before the next one begins. Hence, "quieting down time" is part of changing from one activity to another. Examples of transitions include lining up, taking seats, or establishing order during a period of change in activities. The latter might consist of the teacher instructing all students to put their heads down on their desks for a few minutes while the lights are turned out. It might also consist of a disciplinary remark by the teacher to one or more students.

Disciplinary actions carried out within another activity are not transitions. These are considered task engagement feedback, in that they are designed to maintain the appropriate student behavior with respect to an ongoing task. This is to be differentiated from disciplinary actions that occur during transitions, when there is no task or activity.

It should be noted that task engagement feedback is coded as an instructor move only during reading or mathematics activities.

Although a student can terminate his/her transition by starting a new activity, a student would not generally initiate a transition. If a student finishes one activity, then wait would be coded when no subsequent activity has been designated. If another activity was previously designated to be carried out immediately after the activity the student has just finished, (e.g., when the teacher had said, "When you finish your math, start your next reading chapter"), then that activity would be coded immediately, without any transition. (The student might be coded as not engaged-interim or not engaged-off-task.) However, in some unusual instances the student might initiate his/her own transition. For example, upon finishing an activity just before a recess or lunch period, the student might line up at the door without instructions by the teacher to do so. In this case, the most appropriate code is transition, because the student is obviously conducting a transitional behavior during a period of no assigned activity. (Note that although there is no assigned activity for that student, others may still be working so that they still have an assigned activity.)

It should be noted that when other activities are carried out simultaneously with a transition (such as giving instructions for reading homework while the students are lining up to go home), then the other categories are coded. That is, other activities are given priority over transitions for the purposes of coding.

The third code is management (M). This refers to the conduct of class business that is unrelated to any instructional activity. This would include the collection or redistribution of milk money, the distribution of milk, writing the names of free lunch recipients on the blackboard, discussing or making arrangements for a field trip, completing administrative forms, etc.

Often, management will occur simultaneously with a transition. For example, students might start lining up to leave for lunch while the teacher reads aloud the names of those who will get a free lunch. This should be coded as a management period, because other activities are given priority over transitions (as discussed above).

The fourth code, break (B), refers to any recreational or free period. This includes recess, unstructured P.E., lunch, milk breaks, and non-instructional games. Unstructured P.E. refers to P.E. periods where students are free to do whatever they choose, so that the period is essentially indistinguishable from a recess except that it is called "P.E." Direct teacher supervision of the P.E. activity (such as calisthenics or a baseball game) would constitute structuring, so that the activity would be coded as nonacademic instruction (see below).

Breaks will usually be officially designated break periods. The break code should not be used for "dead time" in the classroom (this would be coded wait) or for periods during which students are not engaged in a designated activity. However, in some cases it is possible for a student to initiate his/her own break. For example, a student might complete a reading assignment and have no subsequent activity designated by the teacher. This is coded as a wait period if the student starts no other activity, it is coded nonacademic instruction if the student draws, it is coded reading practice if the student reads a library book, etc. Therefore, following the same reasoning, if the student plays a game of Monopoly in the back of the room, then a break is coded.

Using the restroom and getting a drink of water are not coded as break unless the teacher designates a period for these activities. Therefore, if the teacher stops a testing session and lets the students leave to use the restroom, a break is coded. However, if a given student must leave the room to use the restroom or to get a drink of water, then the ongoing activity is still coded for that student. If that ongoing activity is a general content activity (such as other academic instruction), then no code would be used to indicate that the student left for the restroom or drinking fountain. However, if the student leaves during a reading or mathematics activity, then the reading or mathematics content is coded and the learner move, not engaged-off-task, is coded. (See discussion of learner moves, below.)

The fifth general content code, nonacademic instruction (N), refers to a wide range of organized classroom activities that do not fall within a fairly narrow domain of academic instruction. This category includes flag salutes, fire-drills, sharing, storytime, music, art, and structured P.E. It might also include a regularly scheduled individual conference or group discussion on general behavior problems. (Discussions of behavior relevant specifically to reading or mathematics instruction would be coded as task engagement feedback under reading or mathematics content).

As mentioned above, structured P.E. is a P.E. period supervised by a teacher. This would include a teacher-supervised athletic competition during school. However, it would not include teacher-supervised athletic competition conducted after school.

It should be noted that storytime and listening to an audiotape are listed under an "Other" category in the Reading Glossary for teacher logs. However, these activities will be coded as nonacademic instruction for the observation unless they involve some reading by the student (presumably reading along with the teacher or the audiotape), in which case a reading content code would be used.

The same principle applies to any other activity. That is, if reading or mathematics occurs during any activity, then the reading or mathematics takes priority and is coded. Therefore, students reading lyrics as they sing (during music) or measuring lines while they draw (during art) would be coded for their reading or mathematics activity, rather than the nonacademic instruction of the music or art. Similarly, if a student engages in a nonacademic instructional activity (often drawing) during a reading or mathematics period, the reading or mathematics content is coded rather than the nonacademic activity. In this case, a nonengaged learner move would be coded. For example, the ongoing activity might be a standardized reading test with several subtests, each of which must be coded for its reading content. If the target student finishes a subtest early and starts drawing, then the ongoing reading is coded rather than the nonacademic activity of drawing. In this example, the content of the reading subtest to come would be coded and the student would be coded as not engaged-waiting. These codes would be used because reading takes priority over nonacademic instruction. The student is only drawing because he must wait for the next subtest to begin. Therefore, the content of that next subtest is coded and the student is coded as not engaged in that content because he/she is waiting.

Two aspects of the example above should be noted in passing. If the student engages in reading or mathematics while waiting between subtests (such as reading a library book), then that engagement in reading or mathematics is coded because engagement in reading or mathematics takes priority over nonengagement in reading or mathematics. The second aspect to note is that after the final subtest, the student would no longer be waiting for another subtest. Therefore, the general content category, wait (discussed above) would be coded (if the student just waits).

As a general rule, observers should not attempt to infer the teacher's intent with regard to a designated instructional activity.

Rather, the observer should code the explicity (verbally) designated activity (giving priority to any student engagement in reading or mathematics). For example, the teacher might instruct the students to work on mathematics. If the target student stops working on the mathematics before finishing it and begins to play with a nonacademic game, then that student is coded as not engaged in mathematics, even if the teacher tacitly accepts the game activity. This tacit acceptance of the game might range from ignoring the student playing the game to actually answering a student question regarding how the game is played. Only if the teacher verbally and explicitly indicates that the game is an acceptable activity, stating that the student may play the game rather than work on the mathematics, can the nonacademic instruction code be used.

The sixth general content code, other academic instruction (O), refers to academic instruction other than reading and mathematics. This includes social studies, science, and foreign language (including learning foreign numerals). (It should be noted that foreign language is categorized as "Other reading related" in the grade five reading gloassary for teacher logs.)

The priority of reading and mathematics content, discussed above for nonacademic instruction, applies to all of the general content codes and is particularly important for other academic instruction. Therefore, if an other academic activity involves any reading or mathematics, such as reading a social studies text or performing computation for a science task, then that reading or mathematics is coded. Also, if a student works on an other academic activity during a reading or mathematics period (without having finished the reading or mathematics assigned for that period), then the student is coded as not engaged in the reading or mathematics assignment.

As discussed above, the activity assigned by a teacher should be determined according to explicit (verbal) designations of the teacher, rather than implicit designations inferred by the observer.

The seventh and final general content code is absent (coded with the blank op scan circle after "O" and before "DC"). This is used for time during which a student is not at school. It is important that the observer be certain that a student coded as absent is not involved in an activity in another room. Absence can be verified by checking with the teacher.

Absence should not be coded after regular school hours. Therefore, if one student works after school on reading or mathematics, the observer codes only that student, coding nothing for the other students. A separate op scan sheet is used to code the activities of the student who works late. No ID numbers are entered for the other students. This procedure insures that the coding of absence will represent actual absence, rather than being an artifact of the after-school work of a single student.

IV. B. Reading and mathematics content.

The coding of reading and mathematics content is central to this observational system, because of the fact that learning is to be measured in terms of reading and mathematics. For this reason, reading and mathematics activities are given priority over the general content categories. As explained previously, the priority of reading and mathematics is manifested in the coding of student engagement in reading and mathematics ahead of any alternative student non-engagement, and the coding of student non-engagement in reading or mathematics ahead of any alternative engagement in a non-reading or mathematics activity. Therefore, if the target student is engaged in reading or mathematics, that activity is coded rather than any alternative activity that the teacher may have assigned to that student. This holds even when the teacher has assigned a different reading or mathematics activity. That is, we always want to know when the target student is involved in any reading or mathematics activity, regardless of what other intentions the teacher may have at that time. In addition, if the target student is not engaged in reading or mathematics, but the teacher has assigned some reading or mathematics activity, then the student's non-engagement in the assigned reading or mathematics activity is coded. This holds even if the student is working diligently on some other academic content (involving no reading or mathematics). That is, we always want to know when the student is not working on reading or mathematics if reading or mathematics has been assigned.

It should be noted that the "assignment" of reading or mathematics is determined according to the verbal (oral or written) indications of the teacher. Observers should not attempt to infer the teacher's intentions. Therefore, even though the teacher may seem to implicitly accept the student's engagement in an activity other than the assigned reading or mathematics (such as when the teacher observes but does not object to the student's alternative activity), the student's non-engagement in the assigned reading or mathematics is still coded.

Only when the teacher explicitly states that the student may engage in the alternative activity is the engagement in that activity coded rather than non-engagement in assigned reading or mathematics.

The observer should remember two qualifications to the discussion above. First, if the student's alternative activity is also reading or mathematics, then the engagement in that alternative reading or mathematics is coded. Second, if the student has finished the assigned reading or mathematics (and there is no additional reading or mathematics assignment), then engagement in a non-reading or mathematics activity would be coded because the assigned reading or mathematics no longer applies to that student.

The content coding categories for reading and mathematics correspond generally with categories explained in the glossaries for the second and fifth grade daily logs that will be maintained by teachers in this study. Section VI of this manual presents charts of the correspondence between the reading and mathematics definitions of these glossaries and the observation codes used here for reading and mathematics. There are four charts, one each for reading and mathematics at the second and fifth grades. Each chart is followed by the corresponding glossary. These charts and corresponding glossaries provide the definitions of reading and mathematics content codes to be used in the observation.

It should be noted that the same op scan sheet is used for observation at both second and fifth grades. Therefore, the same content categories are available for coding at both grades. This procedure is different from that used with the daily logs. The correspondence charts found in Section VI should be used to code content at both grades irrespective of the daily log grade level to which the chart refers. This, of course, results in the more frequent application of certain reading and mathematics categories at grade two and of other categories at grade five. For example, addition and subtraction without regrouping will be more commonly coded at grade two, whereas division will be more common at grade five.

A few general guidelines should be used when coding reading and mathematics content. First, the observer should code as close to the moment sampled as is practical That is, if the top half of a page has items in one content category, while the bottom half falls into another category, then the half of the page that the student is working on at the moment sampled should determine the content category to be coded. Content coding may even be practical on a problem-by-problem basis in some cases, where a student works on each problem for several minutes. (It is important to note that difficulty level, to be discussed later, is never coded on a problem-by-problem basis. The observer should always code the difficulty of a particular kind of problem in general, rather than coding according to whether a student is right or wrong on each problem separately.)

A second guideline is that the focus of a given problem or set of problems should be coded when operations related to more than one content category are involved at once. For example, if multiplication and addition are involved in an exercise focusing on the drawing of matrices with specified numbers of units per side, then spatial application is coded because it is the focus of the task. Multiplication and addition are involved, but are not central. Similarly, if a student must write sentences in answer to comprehension questions, then comprehension is coded as the focus of the task. The writing (reading related) is not the central focus of this task.

In some cases there will be no single focus to an event. The most common example is the directions given for a set of problems involving several different content areas. This would be coded as reading related or mathematics related.

A third guideline is that the observer should be prepared to erase and change previous content coding when it becomes apparent, upon subsequent observation, that the previous coding was incorrect. Therefore, do not routinely code directions as reading or mathematics related simply because the content involved is not always apparent at the time that the directions are given. If an appropriate content focus becomes apparent after the directions have been given, then the observer should recode, thereby using the most accurate description of the previously observed moment.

Although Section VI charts and daily log glossaries provide sufficient information for coding the various reading and mathematics content categories, a few additional notes are provided here for further elaboration.

Notes on reading. One of the most important guidelines for the coding of observed reading content is that written words must be involved at some point in an activity in order that it can be coded as reading content. Therefore, if a teacher reads a story to the class, and the students do not read along with the teacher, then nonacademic instruction is coded rather than reading.

It should also be noted that the coding of reading content can be particularly demanding of the observer. The underlying focus of a reading lesson is not always visually obvious. For example, a decoding pattern may be embedded in a spelling lesson that appears to involve an unstructured collection of words. The observer must examine such a lesson carefully to assure that these underlying objectives will be recognized. It is easy for the observer to become so involved in all the other information to be coded that some of the less obvious characteristics of an activity are overlooked. This is particularly true for reading content.

A few examples of somewhat complex coding situations are provided here for several of the reading content categories.

A story that is read orally by the teacher or a film viewed by students would be coded as nonacademic instruction or other academic instruction (depending on the content). However, if such an oral story or film is followed by written comprehension questions, then the time spent by a target student answering those questions is coded as reading comprehension.

If a target student is learning to identify words according to the equivalence of their sound and their meaning (onomatopoeia), then word meaning is coded (assuming that written words are involved in the lesson at some point). For example, the teacher might read a story while the students identify and write those words from the story that involve onomatopoeia. If the student must write sentences using these words, then the time spent writing the sentences is coded as word meaning (rather than reading related), because the focus of the task is the correct use of words according to their meaning. If the target student reads his sentences aloud to himself after writing them, word meaning is still coded (rather than practice reading), because the student is probably checking his sentence with regard to the correct use of the specified words.

Spelling is coded when the student is required to write specified words, where there is no decoding pattern to the words to be spelled. If the student is writing words of his/her own choice, then the task is considered to be creative writing rather than spelling and is coded as reading related. Spelling could be oral, involving no written words directly, but involving the specification of each letter that would be used to write the words. Spelling might also involve selecting the correctly spelled words from a group of words and non-words, so long as the task is constructed with a spelling focus. In some cases the words to be selected might be listed elsewhere in the materials of the lesson. Spelling would still be coded, so long as that is the focus of the exercise.

Spelling might also occur within an activity that is focused on writing for some other objective. If a student is writing (for creative writing, word meaning, etc.) and receives feedback from the teacher regarding the correct spelling of a word used in that writing, then the content to be coded with that feedback is spelling. Although the task may have some other focus, the focus of the feedback itself is spelling. Therefore, it must be coded with spelling, the content to which it is related.

Reading below the test level includes copying, as indicated by the Section VI charts and daily log glossaries. Copying includes copying the heading (including the student's name) or the directions for a reading task. Reading below the test level also includes visual and auditory discrimination. This includes tasks involving the matching of words or letters (such as finding written words from a list in a written sentence), so long as matching is the focus of the task.

Notes on mathematics. Mathematics is a relatively hierarchical subject matter area. Therefore, it is important to code the higher level operations that are undertaken in a given task, rather than coding all of the subskills that may also be involved. An obvious example is division. Subtraction and multiplication will generally be embedded within instruction on division, but only the division should be coded.

The correspondence charts and glossaries for mathematics, Section VI, are reasonably straightforward, but a few elaborations may be helpful. The daily log category, speed tests, is shown to correspond with addition and subtraction without regrouping. Addition and subtraction with regrouping is given as a less likely possibility. The rule, here, is simply to code (for observation) the computational operations involved in the speed test. These will usually be addition and subtraction without regrouping. However, any other computation that may be observed as part of a speed test (including even multiplication or division) would be coded.

Spatial application is listed within the log category, "other concepts or application," at both grades two and five. At grade two this would include instruction on geometry. It should be noted, however, that instruction involving geometric figures wherein no reference is made to the verbal labels for those figures should be considered a developmental activity and coded as mathematics below the test level. This will often occur at grade two. The spatial application within the other concepts daily log category at grade five includes instruction on volume, solid figures, and constructing bar and line graphs. In addition, reading maps for the purpose of measuring distance would be coded as spatial application.

Mathematics related is listed within the log category, "other concepts or application," at grades two and five, and within the category, "other computation," at grade five. This includes ordinals and nonlinear measurement at grade two. It includes liquid or weight measures, statistics and probability, set theory, set diagrams, logic, place value with decimals, concepts of exponents, and concepts of averages at grade five other concepts. It includes decimals, computation in a base other than ten, and computing averages at grade five other computation.

Mathematics below the test level is charted within the daily log category for grade two developmental activities with notation of the possibility that it will occur in grade five other concepts. Examples of other concepts below the test level would be very simple set theory, set diagrams, or logic, some of which could even occur in some form at grade two. Anything in the other concepts domain that is coded as below the test level should be clearly so.

It should be noted that copying is coded as below the test level for mathematics, just as it is for reading. This would include copying the heading or directions for a mathematics task and copying a set of problems without deriving answers at the same time. Copying problems without deriving answers would usually take the form of copying a set of computational problems off a blackboard. If the student copies all the problems before computing any of them, then the copying time is coded as below test. If the student computes an answer to each problem immediately after copying it from the board, then the appropriate computation code is used even during the copying, because it is assumed that the student may have been considering the computation of that problem while copying it.

IV. C. Setting.

The setting codes ("S" for self-paced and "O" for other-paced) are used if and only if reading or mathematics content is coded for the same event. The setting, or pacing, of the reading or mathematics activity is coded to characterize the cognitive demands that the activity places upon the student. An activity is coded as self-paced if it is designed so that the student can think at his/her own pace, using as much or as little time as desired for each problem completed. The other-paced code is used for activities that require the student to proceed at an externally determined pace.

The general rule for coding setting is to code self-paced whenever the student can set his/her own pace for two or more problems at a time, while coding other-paced whenever the student cannot set his/her own pace except (at the most) within a single problem at a time. This somewhat arbitrary dichotomy is useful for increasing the reliability of observational coding.

The self-paced code is generally used when a student is working independently, such as during tasks described as "seatwork." However, following the rule given above, the self-paced code is used for timed or speed-tests whenever the student is allowed to work through two or more problems within a single timed-period. If the student is directed through the test on a problem-by-problem basis, as when the teacher reads each question before the student answers it, then other-paced is coded. The self-paced code is also used in most one-to-one tutoring situations.

Although tutoring may appear to involve problem-by-problem pacing by the instructor, it is likely that the student is at least as influential as the instructor in determining that pace (at least whenever there is only one student).

The other-paced code is used for lectures, recitation exercises (oral question-and-answer activities), flashcard exercises, group discussions, and any written activity (including workbooks and tests) where the teacher takes the students through each problem one at a time. Explanations or directions provided by an instructor to more than one student at a time are coded as other-paced. Explanations or directions provided to a single student (as tutoring) are coded as self-paced.

Setting should be coded as close to the moment sampled as is possible. Therefore, if the observer samples directions for a self-paced seatwork activity, given by the teacher to the entire class at once, then the other-paced code is used. Similarly, the other-paced code is used for the moment that the teacher interrupts a self-paced, seatwork activity to explain some aspect of that seatwork to the entire class as a group. However, the self-paced code is not used when the teacher explains something to an individual student in the middle of a group activity, unless that explanation is provided in such a way that the other students could not attend to and understand it.

IV. D. Difficulty.

The difficulty level of a task for the target student, easy, medium, or hard, must be coded for all reading and mathematics events. Difficulty is coded to indicate the cognitive demands of the reading or mathematics task for the individual student. It is expected that learning will be related to the amount of time that students spend working at each of the three difficulty levels.

Easy represents work on existing knowledge or skills of the student. Time at this level may serve as useful reinforcement of existing skills. However, it may also consist of unnecessary repetition or even overlearning. It is expected that time in the easy category will be positively related to learning outcomes up to a point, but that beyond some optimal level, time in the easy category will show diminishing increments of learning.

Medium difficulty is the middle range between easy and hard, representing those activities that are generally challenging for a target student, involving some unacquired and some existing knowledge or skills of the student. It is expected that time spent in the medium difficulty range will tend to show a positive relationship with learning outcomes.

Hard is a category consisting of tasks that the target student cannot perform beyond a chance level of correct responses. That is, the student shows essentially no understanding of the task. Time spent at the difficulty level, hard, is not expected to show a positive relationship with learning. In fact, a negative relationship would not be entirely surprising.

It should be noted that the category, hard, will generally occur much less frequently and over shorter periods of time than will easy and medium. Hard activities may never be observed for some target students or, perhaps, never in some classes. The categories, easy and medium, however, are both fairly common. Each of these two categories will usually represent a substantial amount of time for every target student.

The primary basis for determining the difficulty level of a task for a target student is the *error rate* of that student for the *kind* of problems included in that task. However, in addition to error rate, the *speed* with which a student works will sometimes be used to differentiate the easy and medium difficulty categories. The *easy* category is characterized by a very low error rate, where the student appears to be responding with *virtually no errors*, except what you might expect by chance (careless errors). The *hard* category is characterized by an extremely high error rate, where the student appears to show *virtually no correct responses*, except what you would expect by chance (luck). The *medium* category includes the the range *between easy and hard*. The additional consideration of the speed with which the student works through the problems enters in when virtually no errors are observed, but the student is working at a noticeably slower than average pace. If such an *unusually slow but errorless response rate* is not simply a function of a low level of engagement, but in fact appears to be the *result of the difficulty* of the task for that student, then *medium* would be coded *rather than easy*.

The observer should take into account the speed with which the student completes a task only when the student is *obviously* much slower than the average student at that grade level working on that task. For example, if the target student has spent 30 minutes on the first three problems of a 20 problem computation worksheet, while most of the class completed the entire worksheet in less than 30 minutes, then medium would be coded even if the target student has answered those first three problems with no errors. However, in such a case, the target student may display a low rate of engagement. The difficulty of the task may be the cause of the low engagement rate. However, the low engagement rate could be the cause of the *apparent* difficulty of the task. In addition, if the student has rarely been engaged and has completed only a few problems, then the observer may not have ever seen the student actually complete a problem. Hence, the observer may not know whether the student is capable of correctly completing those problems at all, in that the target student could easily have copied his/her answers at times when the observer was not present. Therefore, when a student has been completing a task at an extremely slow speed, but without making errors, then the observer will often have to ask the student to do a problem, so that the observer can determine whether the slow work rate is due to task difficulty or to poor engagement and whether or not the student is really able to produce correct responses.

As stated above, the coding of difficulty should be based on the error rate (and speed where applicable) of the target student with respect to the kind of problems included in the task observed. This should include all the generally contiguous problems of the task that are of similar stimulus characteristics and response demands, without including problems from more than one of the content categories of this observation system. Stimulus characteristics refers to such considerations as the complexity of the words involved in a reading task and the number of digits for numerals used in a mathematics task. Response demands refers to such considerations as whether the student must generate his/her own responses or may select a response from choices provided as part of the task.

Problems of similar stimulus characteristics and responses demands that are within the same content category should always be coded with the same difficulty code for a given target student. Although the difficulty code might change for that student over time (usually as a result of student learning, but increased confusion might also be possible), the difficulty code for that student would be the same for all of the problems that are classed together in terms of stimulus, response, and content features. Therefore, if the observer is already aware of the difficulty level of a given kind of problem for a given target student, as judged by previous observations, then the difficulty level of problems of that kind can be coded without further judgments by the observer. Subsequent judgments of difficulty for that class of problems, with respect to the same student, would only become necessary when the passage of substantial time or intervening events (such as a teacher's explanation) cast doubt upon the current validity of the previously determined difficulty level.

Hence, difficulty level is not coded on a problem-by-problem basis. Within a set of related problems, the fact that a student is incorrect in response to one problem and correct in response to the next does not result in the coding of the first response as hard, and the second response as easy. Rather, *all of the problems within the related set receive the same difficulty code*, according to the student's performance on the set as a whole.

It should be noted that difficulty is always coded for the *academic task that determines the content code* for a given event. Therefore, when the student is listening to the teacher give *directions* or task *engagement feedback*, the coding of difficulty does *not* relate to those directions or that feedback per se. Rather, it relates to the content of the academic task to which the directions or task engagement feedback apply. However, if the target student is copying directions (with learner move of engaged-directions), then reading below the test level is coded for the content. Therefore, the difficulty level coded for that event must apply to the difficulty of copying those directions.

It should be noted that coding the difficulty level for structuring and directing will often involve several content areas, possibly including several different tasks (such as when the student must complete several activities in sequence). It will not always be possible to isolate a single content category to which the sampled moment of observation applies, in that the directions given at a single moment may apply equally to each of several content categories. As discussed previously, the content code in such a case is either reading related or mathematics related. The difficulty code would usually be *medium*, because the variety of content areas is likely to include tasks of a variety of difficulty levels, with at least a substantial proportion in the medium range. Easy would be coded only if all the tasks involved in the directions are easy for the target student. Similarly, hard is coded only if all the tasks are hard. Therefore, when there is a variety of content areas involved in a single moment (reading or mathematics related), then the appropriate difficulty code will usually be medium.

To some extent, the extremely simple tasks, such as copying, and the more demanding tasks within the easy category, such as performing computation at a reasonable pace without errors, will be differentiated by their content codes. That is, copying would be coded as reading or mathematics below the test level, whereas the easy computation would be coded in some category of mathematics computation. It should be noted, however, that copying might fall within the medium difficulty category, such as in those cases where the target student is unable to copy according to the intended format required in the directions provided.

Accurate coding of difficulty level will obviously be, itself, an extremely difficult task in some cases. Nevertheless, the difficulty level of reading and mathematics content must always be coded, even when the student is not engaged in the task for which difficulty is coded. Where little information is available for the determination of difficulty level, the observer must make his/her best judgment at the time. Of course, changes in prior coding may be made if subsequent information indicates that the prior coding of difficulty was inaccurate. However, it should be noted that the difficulty level of a task for a student can change over time, so that the observer should be careful not to change prior coding when it is not clear that the prior coding was incorrect for the time period to which it applies.

The judgment of difficulty level must be made on the basis of overt responses by the target student in relationship to the task under observation. Therefore, the coding of difficulty will be less reliable when few or no overt responses are observable. However, it will be possible to isolate, for the purposes of data analysis, those events for which there may have been few or no observable overt responses. These events will be characterized by the learner move coded with them, indicating that the student's engaged response was covert or that the student was not engaged. Therefore, it will be possible to analyze the extent to which the availability of overt student responses is related to the reliability with which difficulty level can be coded.

It should be noted, however, that the observer can often judge difficulty on the basis of overt responses even when no overt response occurs within the particular event being coded. Previously observed overt responses for the same kind of problems can be used to determine difficulty. In addition, the observer can simply ask the target student to perform a problem overtly (read aloud, compute a mathematics problem, etc.). Often it is possible to ask a student to do a problem during the ongoing observation. In other cases, the observer may prefer to wait until a recess or lunch period, ask the student to perform a problem, and thereafter code the difficulty level for previous events involving the same kind of problem.

Several specific situations warrant consideration to clarify the application of the procedures described above. First of all, the error rate used to judge difficulty must be evaluated in terms of the probability that a student can guess the answer to a problem without understanding it. This will depend a great deal upon the kind of problem performed by the student. For example, if the student is writing complete sentence answers to reading comprehension questions, then there is very little possibility of his/her correctly guessing the answer. However, if the student is responding to true-false questions for reading comprehension, then there is a fifty percent probability of his/her correctly guessing the answer.

Error rates and the probability of guessing correctly are not as readily applicable to oral reading as they are to other activities. This is because there are many opportunities for errors, and little apparent chance for guessing (decoding and comprehension skills would have to be applied in order to guess). Furthermore, the passage to be read may be a combination of extremely easy and extremely difficult words. For the purpose of enhancing the reliability of coding between observers, a simple rule will be used here. If the student is unable to read only one word (or none) per paragraph, then the passage will be coded as easy for that student. If the student is generally unable to read at least two but no more than eighty percent of the words in each paragraph, then the passage will be coded as medium for that student. If the student is unable to read more than eighty percent of the words per paragraph, then the passage will be coded as hard for that student. "Unable to read" would apply to words that the student cannot read properly without prompting. This should not include careless errors. If it appears that a student has misread a word only because of a careless error, then that error should not be included in the determination of error rate.

It should be noted that this procedure is applied regardless of the student's grade level or the material that the student is reading. The error rate is determined for a given student relative to the task at hand. This determination is not adjusted according to the grade level of the student or the level of the task.

The context within which problems are performed may affect the error rate for those problems. For example, a given student might be able to perform certain computation problems with virtually no errors when working alone at his/her seat. The same student, however, might be so distracted when working at the board in the front of the class that he/she shows a high error rate, possibly even being unable to answer the problems at all. Those problems for that student would therefore be coded at different difficulty levels depending upon whether the student is working at his seat or at the board. Hence, the context within which the problems are performed is considered to be part of the problems themselves, for the purpose of coding difficulty.

IV. E. Learner moves.

A learner move must be coded for each reading or mathematics event, and may not be coded for any event in one of the general content categories. The most important information obtained by the coding of learner moves is the engagement or lack of engagement of the student in the reading or mathematics content of the event. That is, the crucial information to be obtained with the learner move codes is the determination of whether or not the student is actually performing the reading or mathematics task coded. If the student is engaged in the substantive reading or mathematics content of the event, then engaged-written, engaged-oral, or engaged-covert is coded. If the student is engaged in the directions to the task, then engaged-directions is coded. This indicates that the student is engaged in a part of the task that is essential to the performance of that task, but does not involve the learning of the substantive reading or mathematics content itself. (It should be noted that engaged-directions is the learner move that is parallel to the instructor move, structuring-directing.)

If the student is not engaged in the reading or mathematics content of the event, then not engaged-interim, not engaged-waiting, or not engaged-off task is coded. These three categories provide information on the actual student behavior when he/she is not engaged in the task, giving some indication of the reason for the lack of engagement. It should be noted that when a not engaged learner move is coded for an event, then the student must be not engaged in both the content and the instructor move for the same event. The only exception to this rule occurs with the instructor move, task engagement feedback, as discussed later in this manual.

Of the three learner moves indicating engagement in the substantive reading or mathematics content of the event, the crucial distinction is between overt and covert student response modes. Engaged-written and engaged-oral are overt response modes, while engaged-covert is (obviously) covert. Overt student responses are defined as those responses that allow the observer (or a teacher) to judge engagement and task difficulty directly, on the basis of ongoing student behavior. This is especially important for task difficulty, where the observational data for overt responses may often be more accurate than the data for covert responses. Given this distinction between overt and covert response modes, possible differences in the qualitity of observational data can be taken into account during data analysis.

The learner move, engaged-directions, includes both overt and covert response modes. The crucial information, here, is that although the student is engaged in the reading or mathematics task, he/she is engaged in a part of that task (directions) that does not involve the substantive reading or mathematics content to be learned. Therefore, engaged-directions is a learner move that is intermediate between engagement in the substantive content and the lack of engagement in that content, at least for the purposes of student learning in reading or mathematics.

The three not engaged learner moves distinguish between the lack of engagement due to student involvement in a peripheral activity related to the ongoing task, and the lack of engagement due to the student's outright non-involvement in the task. The peripheral activities fall into two categories, interim activities and waiting. Not engaged-interim learner moves include the non-cognitive, physical behaviors that the student must carry out in order to complete a task, such as getting more paper or marking completed tasks on a class chart. Not engaged-waiting learner moves include waiting for the teacher's assistance and waiting for the teacher to return to lead a group activity. In both of these categories, the student is not engaged in the academic task itself, but only because of involvement in an activity that is peripheral to that academic task. The learner move, non engaged-off task, however, indicates that the student is involved in neither the academic reading or mathematics task itself, nor any activity that is peripheral to that academic task. Whereas not engaged-interim and not engaged-waiting may contribute to the completion of the academic task, not engaged-off task does not.

The determination of engagement or non-engagement is central to the coding of learner moves, because this distinction is the most important of those involved in the learner move categories. Whenever there is ambiguity regarding student engagement, the observer should give the student the benefit of the doubt and code an engaged learner move. Non-engagement should be coded only when it is reasonably clear that the target student is not engaged in the reading or mathematics task of the event coded.

Several rules are necessary for the coding of engagement. If the target studen is engaged in a reading or mathematics activity, this is coded even though the student may not be engaged in some other activity that has been assigned by the teacher. That is, if the teacher has assigned art, but the target student reads a library book instead, then the student engagement in reading is coded. This rule applies even when the assigned activity is reading or mathematics. If the student is engaged in one reading or mathematics activity, even those some other reading or mathematics activity has been assigned, then only the reading or mathematics activity in which the student is engaged is coded. Neither the content, setting, difficulty, nor instructor moves of the other assignment are coded.

As a corollary to the rule above, if the student displays both a non-engaged and an engaged behavior for the same reading or mathematics activity, then the engaged behavior is coded. For example, the student might listen to the teacher's explanation or directions (engaged-covert) while sharpening a pencil (not engaged-interim) or raising his/her hand for help (not engaged-waiting). In such cases, the engagement in listening to the teacher is coded.

It is also possible for a student to be engaged in two different reading or mathematics activities simultaneously. This occurs when the student is copying one part of an assignment while the teacher explains or gives directions to another aspect of the same or a different assignment. In this case, the content, learner move, and instructor move of the student listening to the teacher would be coded, rather than the copying. Copying is categorized as below the test level for both reading and mathematics. Therefore, *other reading or mathematics* content that may occur simultaneously with copying (usually when the student copies while listening to the teacher) is given *priority over the copying*.

If the target student is *not engaged in an assigned reading or mathematics* activity, then this non-engagement is *coded even when the student is engaged in an alternative activity other than reading or mathematics*. The *determination of assigned activities* should always be based upon the *explicit, overt* behaviors of the teacher (usually verbal behaviors, but possibly including written instruction). Therefore, if the teacher assigns a reading or mathematics activity, but appears to implicitly accept the student's engagement in a non-reading or mathematics activity, then the non-engagement in the assigned activity is still coded. Even if the teacher goes so far as to help the student with the unassigned non-reading or mathematics activity, the assigned reading or mathematics activity is coded (along with the associated non-engaged learner move). Only when the teacher indicates explicitly (usually verbally) that the student may work on the non-reading or mathematics activity rather than the assigned reading or mathematics, is the non-reading or mathematics activity coded (with no learner or instructor move because a general content code would be used).

The coding of *engagement* should be determined strictly according to the student behavior observed *at the moment sampled*. However, the engaged *response mode* or the non-engaged activity should be *determined somewhat more broadly*, according to the *ongoing activities* surrounding the moment sampled.

The *engaged response mode* should be determined according to the *student* behavior that pertains to the coding of engagement and difficulty. For example, a student who is engaged in a written task may, at the moment sampled, pause to think, read a question, erase a mistake, or turn to the next page of problems. Engaged-written would be coded in each case, because written answers are the ongoing response mode of the task that allows the observer to determine engagement and task difficulty. Similarly, if a student is reading orally, but at the moment sampled he/she has paused to figure out the next word, then engaged-oral is still coded. When there is no overt ongoing response mode, engaged-covert is coded.

It should be noted that the rule above can not be applied too broadly. During an oral reading group, where students are taking turns reading, engaged-oral is coded if it is the target student's turn to read at the moment sampled, whereas engaged-covert is coded when the target student is reading along silently while another student reads.

Engaged-directions is coded whenever the student is engaged in the directions to the academic task, rather than the substantive content. This could be written, oral, or covert engagement. Therefore, the determination of response mode is not necessary when the student is engaged in directions.

The distinction between the moment sampled and the ongoing activity is important to the coding of non-engaged activities primarily for the purpose of identifying waiting that is interspersed with interim or off task activities. That is, students will sometimes take materials out of their desk (interim activity) or talk with a neighbor (off task activity) while waiting for the teacher to provide help or to return to continue leading a group activity. Not engaged-waiting should be coded in these cases because the reason that the student is not engaged is that he/she must wait for the teacher. The interim and off task activities serve merely to fill the time during which the student must wait.

Given the background information above, each learner move will now be discussed individually.

The *engaged-written* code is used for any non-oral (usually motoric) response that *allows the observer to determine engagement and difficulty directly*. This would include not only writing, but measuring, using manipulatives, etc. This would *not* include silent reading where the student uses his finger to guide his eyes across the page, because this behavior provides information only for engagement, not for difficulty. As discussed previously, this learner move is coded according to the ongoing response mode of the task. If the target student happens to be pausing to think or listening to the teacher read the next question during a written task, engaged-written is still coded, because it is the ongoing response mode that allows the observer to determine engagement and difficulty directly for that task.

The *engaged-oral* code is used for any oral response that allows the observer to *determine engagement and difficulty directly*. This would include the target stude asking a question or giving an oral answer. It would also include oral reading even when the student is supposed to be reading silently, so long as the student is reading loudly enough that the observer can judge both engagement and difficulty directly. As discussed previously, engaged-oral should be coded only for those moments at which the target student is speaking if the ongoing activity is a group discussion or reading session where the students take turns responding orally. In these situations *both* oral responding and listening to the oral responses of other students are considered to be ongoing response modes, so the target student response of the moment sampled is coded. However, if at the moment sampled the target student is in the midst of reading orally but has paused to think carefully about the next word, then engaged oral is still coded because that is the *ongoing response mode* at that moment.

The engaged-covert code is used when the student is engaged in the reading or mathematics task but is showing no observable response that allows the observer to determine both engagement and difficulty directly. As discussed above, engaged-covert is coded only when this is the ongoing response mode, not when the student pauses intermittently during a series of written or oral responses. It should also be noted that engaged-covert will often be coded when the student is copying (below test content) or performing an interim activity, while he/she listens to the teacher provide reading or mathematics instruction. As discussed previously, the student engagement in listening to reading or mathematics instruction takes priority over simultaneous below test or interim activities.

The engaged-directions code is used for any moment during which the target student is engaged in listening to or carrying out directions that do not involve the academic substance of the task itself. It should be noted that the student response mode is not differentiated when the student is involved with the directions to a task. The student could be writing, making an oral statement or asking a question, reading, or listening to directions. The reading or mathematics content to which the directions pertain, and the difficulty level of that content, are coded for events during which the student is engaged in directions. Therefore, when the student listens to the teacher's directions for performing a written reading comprehension task, then the reading comprehension and its associated difficulty level (for the target student) are coded, even though the directions may involve such matters as the heading used for the answer page and the textbook pages on which the questions are found. Note that when the student is copying the heading for a paper or the directions to a task, engaged-written is coded as the learner move. The content is reading or mathematics below the test (for copying), and the difficulty level is usually easy.

In some unusal cases the student will have the option of working on one of several different activities and will be in the process of deciding which activity to work on at the moment sampled by the observer. If this occurs, then the observer codes engaged-directions for the learner move. The observer does not code content right away in this situation. Rather, the content of the task that the student eventually selects is coded for the moment(s) during which the student was engaged in the directions of deciding what to select.

The not engaged-interim code is used for activities that are part of a reading or mathematics task, but do not involve the substantive content or the directions of the task. This includes sharpening pencils, handing in and passing out papers, and getting books. Opening a textbook and finding the correct page for a task would be coded not engaged-interim. However, turning a page in the midst of ongoing written, oral, or covert engagement would be coded for the ongoing engagement in the reading or mathematics substantive content. Also, aimless shuffling through pages would be coded not engaged-off task, unless the student is waiting for the teacher, in which case not engaged waiting would be coded. Activities performed by the student to denote the tasks that he/she has completed (such as checking them off on a class chart or in the back of a workbook) are coded as not engaged-interim.

The not engaged-interim code is also used in a variety of situations where the student must devote a relatively significant proportion of time to denoting his/her response to a question or problem. This will often consist of coloring in a particular area, perhaps with a specified color, to indicate a computational answer, a selected geometric figure, a fractional proportion of a figure, etc. A student might also draw a picture to indicate an answer for a reading task. The not engaged-interim code should only be used for student response indication in those cases where the time devoted solely to the indication of a response is readily distinguishable from time devoted to reading a question and determining its answer. This will generally be a function of the speed with which the student can indicate the response. For example, when the student is simply writing the numerical response to a computational problem, then the observer would not attempt to distinguish between response indication and the actual computation time. Engaged-written would be coded for both. However, if the student colors in an area of a picture using a color identified by performing the computation, then the student may spend more time coloring than computing. In such a case, the time spent computing would be coded engaged-written (assuming that the student does write out his answer somewhere), whereas the time spent coloring according to the computational answer would be coded not engaged-interim. However, if the student were to simply pick up a crayon of the color representing the numerical answer and make a quick slash in the area to be colored, thereby spending relatively little time actually coloring, then no differentiation would be made. The entire sequence, in this case, would be coded engaged-written.

In some cases a student may circle a word selected in response to a reading task and then copy that word elsewhere. Even though copying the word may require a relatively significant proportion of time, it is not coded as not engaged-interim. Rather, it is coded as engaged-written, with reading below the test as the content code (rather than the content code for the rest of the task). This procedure is followed because the initial circling of the selected word is considered the response indication for the task. (Circling a selected word would be a relatively small proportion of task time and would therefore be coded as engaged-written.) Hence, copying the word circled is treated as simply a copying activity, with its own content code, reading below the test. If, however, the student's only indication of his/her response is copying selected words and if this requires a significant and distinguishable proportion of the task time, then it would be coded as not engaged-interim, with the same content code as the remainder of the task.

It should be noted that students will often listen to the teacher's instruction or directions while performing an interim activity (such as sharpening a pencil).

In some unusal cases the student will have the option of working on one of several different activities and will be in the process of deciding which activity to work on at the moment sampled by the observer. If this occurs, then the observer codes engaged-directions for the learner move. The observer does not code content right away in this situation. Rather, the content of the task that the student eventually selects is coded for the moment(s) during which the student was engaged in the directions of deciding what to select.

The not engaged-interim code is used for activities that are part of a reading or mathematics task, but do not involve the substantive content or the directions of the task. This includes sharpening pencils, handing in and passing out papers, and getting books. Opening a textbook and finding the correct page for a task would be coded not engaged-interim. However, turning a page in the midst of ongoing written, oral, or covert engagement would be coded for the ongoing engagement in the reading or mathematics substantive content. Also, aimless shuffling through pages would be coded not engaged-off task, unless the student is waiting for the teacher, in which case not engaged waiting would be coded. Activities performed by the student to denote the tasks that he/she has completed (such as checking them off on a class chart or in the back of a workbook) are coded as not engaged-interim.

The not engaged-interim code is also used in a variety of situations where the student must devote a relatively significant proportion of time to denoting his/her response to a question or problem. This will often consist of coloring in a particular area, perhaps with a specified color, to indicate a computational answer, a selected geometric figure, a fractional proportion of a figure, etc. A student might also draw a picture to indicate an answer for a reading task. The not engaged-interim code should only be used for student response indication in those cases where the time devoted solely to the indication of a response is readily distinguishable from time devoted to reading a question and determining its answer. This will generally be a function of the speed with which the student can indicate the response. For example, when the student is simply writing the numerical response to a computational problem, then the observer would not attempt to distinguish between response indication and the actual computation time. Engaged-written would be coded for both. However, if the student colors in an area of a picture using a color identified by performing the computation, then the student may spend more time coloring than computing. In such a case, the time spent computing would be coded engaged-written (assuming that the student does write out his answer somewhere), whereas the time spent coloring according to the computational answer would be coded not engaged-interim. However, if the student were to simply pick up a crayon of the color representing the numerical answer and make a quick slash in the area to be colored, thereby spending relatively little time actually coloring, then no differentiation would be made. The entire sequence, in this case, would be coded engaged-written.

In some cases a student may circle a word selected in response to a reading task and then copy that word elsewhere. Even though copying the word may require a relatively significant proportion of time, it is not coded as not engaged-interim. Rather, it is coded as engaged-written, with reading below the test as the content code (rather than the content code for the rest of the task). This procedure is followed because the initial circling of the selected word is considered the response indication for the task. (Circling a selected word would be a relatively small proportion of task time and would therefore be coded as engaged-written.) Hence, copying the word circled is treated as simply a copying activity, with its own content code, reading below the test. If, however, the student's only indication of his/her response is copying selected words and if this requires a significant and distinguishable proportion of the task time, then it would be coded as not engaged-interim, with the same content code as the remainder of the task.

It should be noted that students will often listen to the teacher's instructions or directions while performing an interim activity (such as sharpening a pencil).

In such cases, the engagement in listening to the instructions or directions for reading or mathematics is given priority over the interim activity. Therefore, rather than coding not engaged-interim, the observer would code engaged-covert (if the student is listening to an explanation, feedback, or question pertaining to the substance of a reading or mathematics task) or engaged-directions (if the student is listening to directions to a reading or mathematics task). This procedure is followed because the engaged student activity takes precedence over the not engaged (interim) activity. (See previous discussion.)

The not engaged-waiting code is used when the student is not engaged in a reading or mathematics task because he/she is waiting for the teacher or for another student. The student might be waiting for the teacher to provide help, such as an explanation of a seatwork problem. This would include the time spent by the student waiting at his/her desk for the teacher to come and provide assistance. Waiting for help would also include the time spent by the student walking up to the teacher's desk to seek help and the time spent by the student walking back from the teacher's desk after having obtained help, all of which is considered time devoted to obtaining help from the teacher. The student could also be waiting for the teacher to return to a group task that cannot be continued without the teacher's presence, such as when the teacher must finish giving directions or read remaining problems. The teacher may have been diverted by any of a variety of other activities, ranging from providing a student with academic assistance on another task, to disciplining another group of students, to answering a phone call from the school office. Regardless of the source of the diversion, not engaged-waiting is coded for the learner move and nothing is coded for the instructor move (for the target student who is waiting). The not engaged-waiting code is also used when the student is waiting for the teacher to complete a non-instructional activity so that a group instruction can continue. This would include time spent by the student waiting for the teacher to pass out papers or write problems on the board. Not engaged-waiting would also be coded while the target student waits for another student to pass out papers or write problems on the board. (Note that no instructor move is coded for the teacher passing out papers or writing on the board, whereas not engaged-interim would be coded as the learner move of a target student who passes out papers or writes problems on the board.) Not engaged-waiting would also be coded while the student waits for the teacher to read the next problem for a test or for some other instructional task. In addition, this code is used when the target student is waiting for another student to complete a problem so that the group can move on to the next problem.

When the learner move is not engaged-waiting, the content, setting, and difficulty that are coded are those for which the student is waiting. Note also that no instructor move can be coded in the same event with not engaged-waiting because the student would not be waiting if there were an instructor move.

It should be noted that not engaged-waiting can only be coded during a reading or mathematics activity. Therefore, if the target student has completed his/her assignment and there is no subsequent assignment, then there is no reading or mathematics activity for that target student. In this case, the general content code, wait, would be used (with no learner move) rather than a reading or mathematics content code with the learner move, not engaged-waiting.

The not engaged-off task code is used when the target student is not involved in the reading or mathematics task in any way, not even being involved in a peripheral activity of the task. While he/she is not enaged-off task, the student might socialize, daydream, behave disruptively, or simply shuffle aimlessly through textbook pages.

Usually the teacher would consider it inappropriate that the student is not engaged-off task. However, this is not a necessary condition for this category. The teacher could tacitly accept the off task activity of the student. For example, a teacher might interrupt a student's reading or mathematics seatwork to ask about the outcome of a baseball game played the day before. In this case, the student is coded as not engaged-off task, with no instructor move. The teacher's obvious acceptance of this socializing does not change its off task characteristics in relationship to the ongoing reading or mathematics. Note that the coding is exactly the same if another student interrupts the target student to ask about the baseball game.

The not engaged-off task code is even used in some cases where the teacher overtly states that the student may leave a reading or mathematics activity temporarily for some other purpose. The not engaged-off task code would be used here when it is clear that the reading or mathematics task is still considered ongoing and will be resumed again soon. For example, a student may leave the room to get a drink or to use the restroom during an ongoing reading or mathematics activity. This is coded as not engaged-off task even when the teacher tells the student (overtly) that he/she may leave to get a drink or use the restroom. Only when the teacher allocates a period of time for some or all of the students to get drinks and use the restroom is this activity coded as a break. For example, if the teacher allocates ten minutes between sections of a standardized test for leaving the room to get drinks and use the restroom, then this is considered a structured break period and is therefore coded as a break.

It should be clear that the student can only be not engaged-off task when there is a reading or mathematics assignment that the teacher has designated for the student at that time. However, in some cases the determination of which assignment has been designated may become complicated. This will often be true when the teacher states that the students should work on any one of several tasks after finishing a reading or mathematics assignment. The fact that the student has several options makes it difficult to code content until after the student selects one of those options. If the student finishes the initial assignment and never selects a subsequent option, then the student is coded as not engaged-off task. If all of the options are within the same reading or mathematics content category, then that category is coded for the content (in which the student is _not_ engaged-off task). If all of the options are reading tasks, but several _different_ reading categories are included, then reading related is coded for content. Similarly, mathematics related is coded if the options include several different mathematics categories. If both reading and mathematics categories are included, then reading related is coded if the student had last worked on reading, and mathematics related is coded if the student had last worked on mathematics. If the student eventually selects one of the options, then the _preceding_ not engaged-off task time must be coded (_re_coded if other codes have already been entered) with the content category of the task selected by the student. It should be noted that if the student is clearly _in the process of deciding_ which of the several options he/she will select, then _engaged-directions_ is coded rather than not engaged-off task. In this case, the content coded would be that which the student eventually selects.

When a student is coded as not engaged-off task for an event, then any _instructor move_ that occurs _pertaining to the task in which the student is not engaged_ must also be coded. Hence, the meaning of this coding is that the student is not engaged-off task with respect to a task with an instructor move that is part of that task. That is, the student is _ignoring the instructor move_. Note that if the student attends to the task-related instructor move then the student is, at that moment, engaged in the task. Note also that the content that is coded for an event with an instructor move must apply to both the task and its related instructor move, whether the student is engaged or not engaged. Therefore, a student can _not_ be coded as _not_ engaged in _both_ a task of one content category and an instructor move of _another_ content category, for the same event.

It should also be noted that if the student is engaged in a reading or mathematics task and ignores an instructor move pertaining to that task, then the instructor move can not be coded. The student must be coded as engaged, because the student is attending to a reading or mathematics task. The instructor move cannot be coded for the same event because the coding of the engaged learner move would indicate that the student is engaged in the instructor move coded for that event, but this is not true. Therefore no instructor move is coded.

There is one exception to the rule that a not engaged learner move indicates that the student ignored the instructor move coded for the same event. This exception is for the instructor move, task engagement feedback. If a student ignores task engagement feedback, then that instructor move is never coded. The learner move coded with task engagement feedback must represent the student behavior to which the task engagement feedback was directed. This procedure is followed because task engagement feedback could range from praise for task engagement to reprimanding for off task behavior. The learner move coded with an instructor move of task engagement feedback must, therefore, indicate what student behavior is the object of the task engagement feedback. Therefore, not engaged-off task coded with task engagement feedback indicates that the student was off task and that the teacher provided feedback pertaining to that off task behavior.

IV. F. Instructor Moves.

IV. F. 1. Moves.

Instructor moves are coded only during reading and mathematics events. However, there will often be a reading or mathematics event with no instructor move because students frequently work independently, without immediate interaction with a teacher.

An instructor move coded for an event must be relevant to the reading or mathematics content and the learner move that are also coded for that event. Therefore, if the target student is coded as engaged, then an instructor move can only be coded if the student is engaged in that instructor move. If the student is working on the assignment about which the teacher is providing an explanation, but the student ignores the teacher's explanation, then no instructor move is coded. In this case, the instructor move is relevant to the content which is coded for the event, but is not relevant to the engaged learner move of the event. However, if the student is coded as not engaged, then he/she must necessarily be ignoring the teacher's explanation (attending to the teacher would constitute task engagement), so that the instructor move is coded. In this case, the coding indicates that the student is ignoring (not engaged in) the teacher's explanation of the reading or mathematics task.

As discussed previously, the exception to the procedure described above occurs when task engagement feedback is coded. For this instructor move, the learner move to be coded for the same event must be the student behavior to which the task engagement feedback is directed. In addition, task engagement feedback is never coded if the student does not attend to it, even if the student is otherwise not engaged in the reading or mathematics task at hand. Therefore, if the student is receiving and and attending to task engagement feedback directed to the student's off task behavior, then the learner move, not engaged-off task is coded. If the student is attending to task engagement feedback that is praise of the student's diligent work on the reading or mathematics task, then the learner move coded is that engagement (written, oral, or covert).

Five of the instructor moves (academic observation, academic feedback, academic question, explanation-need, and explanation-planned) must be related to the substance of the reading or mathematics content coded for the same event. Structure-direct must be related to the goals or directions for that content, but not the learning of the substantive content itself. Task engagement feedback must be related to the student's engagement behavior in relation to the reading or mathematics task coded for the same event.

Each of the instructor moves is discussed in turn below.

The academic observation code is used for instructor moves that consist only of looking at or listening to a student response during a reading or mathematics task. This observation must be directed toward the academic responses of the student. Observation of task engagement is not coded as an instructor move. Therefore, if the teacher actually walks by a student doing seatwork and looks at his/her written responses, then academic observation is coded. However, if the teacher is sitting at a desk in the front of the room and simply looks around the class to see that everybody is working quietly, then no instructor move is coded, because this is observation of task engagement behavior rather than observation of academic responses.

Note that academic observation could be directed toward oral responses as well as written responses. If the teacher listens to a student read, without providing any academic feedback, then academic observation would be coded.

The academic feedback code is used when the instructor informs the student that a written or oral response was correct or incorrect, or provides the student with the correct response but no explanation as to why that response is correct.

Any explanation is coded with one of the two explanation categories (see below). However, the distinction between an explanation and academic feedback can be a fine one. When the teacher provides the student with the correct responses to problems in advance of the student making any attempt to respond to those problems, then one of the two explanation codes is used. For example, if basic addition facts are being taught and the teacher is simply stating basic addition problems and their correct answers, then the instructor move is explanation. However, if a student has just completed a basic addition facts worksheet and the teacher is identifying incorrect answers and providing the corresponding correct answers, then academic feedback is coded. It should be noted that in most cases instruction on tasks that are new to students will involve explanations that go beyond the simple provision of correct responses to problems. However, in some cases the simple provision of correct responses will occur in the form of an instructional explanation, as in the first example above.

In some cases academic feedback will be implicit. This occurs when the student is responding orally and the teacher points out each student response that is incorrect. The student can infer that every response not pointed out by the teacher must be a correct response. Therefore, implicit feedback is being provided even when the student responds and the teacher says nothing, because the absence of a teacher statement indicates that the response was correct. The most common example of this is the oral reading group, where the student reads aloud and the teacher corrects each misread word. In this case, the absence of a teacher correction implies that the word was read correctly. Therefore, the teacher is considered, here, to be providing continuous academic feedback, even when he/she is silent.

Several examples will be useful here to elaborate coding procedures for academic feedback.

The oral reading group provides some useful examples of academic feedback. As described above, if the target student is reading aloud and the teacher is correcting the target student's errors, then continuous academic feedback from the teacher is coded. However, if another student is reading aloud while the target student reads along silently, then the target student is coded as engaged-covert, with academic feedback from the other student (student is coded for the source, group is coded for the focus). This procedure is followed because the other student is providing the target student with feedback relevant to the silent reading being conducted by the target student (the feedback consisting of simply reading the passage orally). Feedback from the teacher to the other student, in the form of correcting misread words, would not be coded as an instructor move for the target student.

In a related example, the teacher reads a story aloud while the student reads along silently. The student's silent reading is coded as engaged-covert, whereas the oral reading by the teacher is coded as academic feedback from the teacher (source) to the group (focus). It is possible, however, that the teacher and students would all read aloud simultaneously. The most common example of this would be singing while reading the lyrics to the song from a music text. The learner move in this case would be engaged-oral. If the teacher can be heard clearly above the rest of the class (leading the class in the song), then academic feedback (instructor move) is coded from the teacher (source) to the group (focus). However, if the teacher cannot be heard clearly above the students, then the academic feedback is coded from the students (source) to the group (focus).

Curriculum materials can also provide the academic feedback in an oral reading situation. If a student is listening to an audio-tape of a reading passage, while reading along silently, then engaged-covert (learner move) is coded for the student's silent reading, with academic feedback (instructor move) from the curriculum (source) to the group (focus). (A group focus is coded because the curriculum feedback is in a general form to be used for all students who listen to the audio-tape.)

Academic feedback can also take a *written form*. However, written feedback is coded only during that time that the target student is *actually referring to it*. No instructor move is coded while the teacher prepares the written feedback or while the student picks it up. Only while the student examines that feedback is he/she receiving academic information, so the academic feedback is coded at that time. Therefore, while the student examines the teacher's written corrections of his/her worksheet, academic feedback (instructor move) is coded from the teacher (source) to the target student (focus). (The target student is the focus because the corrections pertain specifically to his/her responses.) If the student is standing beside the teacher's desk waiting while the teacher corrects the worksheet, then not engaged-waiting (learner move) is coded with *no* instructor move. If the student is walking up to the teacher's desk to pick up the corrected worksheet, then not engaged-interim (learner move) is coded, again with *no* instructor move at that moment.

Written feedback can also be provided by the curriculum. The most common example would be time during which the student corrects his/her own work by referring to a list of correct answers provided in the back of the textbook. This is coded as academic feedback (instructor move) from the curriculum (source) to the group (focus). If the teacher posts a list of correct answers to an assignment, this is considered to be teacher-made curriculum material, equivalent to the list of correct answers in the back of the textbook. Therefore, academic feedback from the curriculum to the group would again be coded.

One other situation that provides examples of academic feedback is that where students take turns orally stating the answers to homework problems while the other students listen and correct their own papers. The learner move would be engaged-written when the target student is listening and marking his answers right or wrong. It would be engaged-oral when the target student is orally stating the answer to a problem. Academic feedback (instructor move) from the student (source) to the group (focus) would be coded when another student is giving the answer to a problem. However, if the other student gives an incorrect answer and the teacher corrects him/her, then academic feedback (instructor move) from the teacher (source) to the group (focus) is coded. If the target student is orally stating the answer to a problem, then academic feedback (instructor move) from the teacher (source) to the target student (focus) is coded. In this case the teacher is providing implicit feedback by saying nothing (indicating that the target student is correct) or explicit feedback by correcting the target student's error.

The academic question code is used when the teacher is asking the student to provide a written or oral answer to a reading or mathematics problem. This would include spelling dictation where the teacher reads a word aloud (academic question is the instructor move) and the student writes that word (engaged-written is the learner move). Another example would be the teacher reading a passage from which the students are to find and write certain types of words or phrases, according to decoding patterns, word meaning, or some other reading objective. The teacher's oral reading of the passage is coded as academic question (instructor move) from the teacher (source) to the group (focus).

Academic question is also coded for written questions if the teacher provides them directly on a problem-by-problem basis. That is, when the teacher uses flash cards to quiz a student, then academic question is coded for the written questions of the flash cards. However, when the teacher hands the student a worksheet of problems, no instructor move is coded.

Note that if the teacher uses flash cards with the target student, teacher is coded as the source of the academic question and target is coded as the focus (the learner move is engaged-oral). If the flash cards are shown to the entire class, then group is coded as the focus. If the flash cards are directed to another student so that the target student hears the other student's answer but does not know what the flash card question is, then no academic question is coded.

The explanation-need code is used for instructional explanations that are provided to satisfy a clear and immediate student need for help with a substantive reading or mathematics problem. Explanation-need will usually be directed toward the resolution of confusion or a misunderstanding that is evidenced by the student's inability to perform a task. In many cases an explanation-need instructor move will be initiated by a student question. Usually this instructor move will be directed toward the individual student for whom the need exists. However, an explanation-need instructor move can be directed toward an entire class. This might occur when the teacher observes that the entire class is having difficulty performing a particular task. The teacher's efforts to explain that task to the class would therefore be coded as explanation-need.

It should be noted that when explanation-need is provided to a group of students, but the target student (within that group) does not share the confusion of the other students and therefore has no partiuclar need for the explanation, then explanation-planned is coded for that target student. That is, the need for explanation-need must pertain to the target student, even when the group is the focus of that instructor move. Otherwise, explanation-planned is coded for the target student.

The observer should be aware that an explanation-need can take the interrogatory form, as when the instructor uses rhetorical questions as an explanatory device.

Note also that when the student has an immediate need for an explanation of directions to a reading or mathematics task, then that explanation would be coded as structure-direct rather than explanation-need. The explanation-need code must be used for explanations of the substantive content of a reading or mathematics task.

The explanation-planned code is used for instructional explanations that do not pertain to an immediate academic need of the target student. This will often take the form of a lecture. Explanation-planned will usually be directed toward something that the teacher sees as a long-term need of the student. This, however, is to be distinguished from immediate needs.

The observer should take care not to confuse explanation-planned with other planned instructional moves, such as questions and feedback or structuring and providing directions. Explanation-need must consist of explanatory instruction.

As with the explanation-need instructor move, explanation-planned can take the interrogatory form, where rhetorical questions are used as an explanatory device.

As discussed above, when the target student is listening to an explanation directed toward the immediate need of another student, but not of the target student, then explanation-planned is coded for the target student.

If some explanation-planned is mixed with structuring and directing, then the explanation-planned is coded, because the substantive content takes priority. The observer should take care, however, not to confuse the explanation of substantive content with statements of instructional objectives (structuring) or explanations of the procedures for completing academic tasks (directions).

The structure-direct code is used for statements of goals or objectives (structure) and the provision of instructions or directions (direct). As with the other instructor moves, this must pertain to the reading or mathematics task coded for the same event. The structure-direct code is used only for non-substantive instructional moves, directed toward student learning of the goals or directions for a task, rather than the reading or mathematics substance of the task. Hence, structure-direct instructor moves are related to learning outcomes in reading or mathematics only indirectly, through their facilitation of subsequent student learning behaviors.

As discussed above, if a structure-direct move is mixed with a substantive explanation, then the explanation is coded. However, any teacher observation, feedback, question, or explanation that pertains only to the structure or directions of a reading or mathematics task is coded as structure-direct.

It has been pointed out earlier in this manual that a variety of reading or mathematics content categories will sometimes pertain to the same structuring and directing. In these cases, reading related or mathematics related is coded for the content of the event.

Note that no instructional move is coded while the teacher collects or passes out papers, or writes on the board (unless the teacher provides simultaneous oral instruction). These are interim activities, not structuring or directing. Interim activities are not coded for the teacher.

The task engagement feedback code is used for the instructor's moves to control inappropriate student task engagement (off task behavior) or to praise positive student task engagement. This code is never used for teacher feedback relating to the student's academic responses (correct or incorrect). This is coded academic feedback, as discussed above.

Task engagement feedback must be related to the reading or mathematics content coded for the same event (no instructor move is coded unless it is related to the content of the event for which it is coded). Therefore, if there is no reading or mathematics content, then no task engagement feedback can be coded. As discussed earlier in this manual, most disciplinary instructor moves outside of any instructional activity will be coded as transition. Task engagement feedback within instructional activities other than reading or mathematics will be coded as non-academic instruction or other academic instruction.

The task engagement feedback code will generally be used during reprimands for the student's lack of engagement or praise for the student's engagement. Task engagement feedback can also take the form of directives pertaining to student engagement. For example, the teacher might tell all the students to put their heads down because they have been excessively noisy. Note that the task engagement feedback would be coded for the entire period during which the students are instructed to keep their heads down. Task engagement feedback is considered the implicit instructor move throughout such a disciplinary activity.

Task engagement feedback is not coded for a target student to whom it does not pertain. Therefore, if the teacher reprimands a student other than the target student, then no instructor move is coded for the target student. The target student is coded as not engaged-off task if he/she looks up from the reading or mathematics task to listen while the teacher disciplines another student. However, if the teacher tells all the students to put their heads down because they have been too noisy, but the observer is aware that the target student has been working quietly, then this task engagement feedback clearly does not apply to the target student even though he/she must attend to and obey that feedback. No instructor move is coded because the task engagement feedback is not directed toward the target student, insofar as the teacher's concern is the students who have been noisy (the teacher is simply unable to identify and isolate each of those students). The learner move that is coded in this case is not engaged-waiting, because the student is essentially waiting for the teacher to deal with the disruptive students in the class. This interaction between the teacher and the disruptive students has caused the target student's disengagement from the reading or mathematics task.

As discussed previously, task engagement feedback is an exceptional instructor move in that the learner move to be coded with it is not the ongoing learner move of the moment. Rather, the learner move that precipitated the task engagement feedback is coded. The purpose of this procedure is to distinguish between reprimands and praise for student task engagement. Both receive the same instructor move code (task engagement feedback), but reprimands are usually coded with a not engaged-off task learner move, whereas praise is coded with one of the engaged learner moves (written, oral, covert, or directions).

Two unusual examples of task engagement feedback require discussion. The first example involves a group question and answer activity where the teacher has asked a question and the target student answers out of turn. The teacher thereupon reprimands the target student for answering out of turn. In this case, academic question (instructor move) and engaged-oral (learner move) are coded, rather than task engagement feedback (instructor move) and not engaged-off task (learner move for answering out of turn). Each pair of moves, both instructor and learner, are involved in the interaction. However, the question and oral answer are coded because the student engagement in substantive academic content is given priority for coding over the student disengagement. (Ironically, both engagement and disengagement are the same student behavior in this example.)

The second example involves the situation where the teacher asks the target student for the answer to a problem and the student replies that he/she has not completed that problem. (The problem might be part of a homework or an in-class assignment.) If the teacher reprimands the student for not completing the task, then this is coded as task engagement feedback from the teacher (source) to the target student (focus). The learner move would be not engaged-off task because this represents the behavior that caused the task engagement feedback. (That is, the student was not engaged-off task when he/she did not do the work.)

In the same example, however, the teacher might make no comment regarding the student's failure to complete the assignment. Instead, the teacher might simply move on to the next student, asking for the answer to the problem that the target student did not complete. In this case, no instructor moves is coded. However, the target student is still coded as not engaged-off task. This procedure for the student's lack of engagement or praise for the student's engagement. Task engagement feedback can also take the form of directives pertaining to student engagement. For example, the teacher might tell all the students to put their heads down because they have been excessively noisy. Note that the task engagement feedback would be coded for the entire period during which the students are instructed to keep their heads down. Task engagement feedback is considered the implicit instructor move throughout such a disciplinary activity.

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In the same example, however, the teacher might make no comment regarding the student's failure to complete the assignment. Instead, the teacher might simply move on to the next student, asking for the answer to the problem that the target student did not complete. In this case, no instructor moves is coded. However, the target student is still coded as not engaged-off task. This procedure is followed so that the learner moves in the two cases are coded in the same way. (The learner move is the statement that the assigned work was not completed.)

This second example, where the student cannot answer a question because he/she did not complete an assignment, should be distinguished from the case where a student cannot answer a question simply because he/she does not know the answer (as when there was no relevant assignment). If the teacher asks the target student an academic question and the target student states that he/she does not know the answer, then engaged-oral is coded as the learner move. Academic question would be the instructor move, unless the teacher follows up with an explanation of the correct answer, in which case the instructor move would be explanation-need.

IV. F. 2. Source.

The source of an instructor move is coded as teacher, other adult, student, or curriculum. In each case, the source coded for an instructor move indicates who (or what) provides the target student with the instructional move coded for the same event.

Teacher is coded for the source of any instructional move by the person who is in charge of the class. This would generally refer to certificated personnel. (It does not necessarily refer to the same teacher who is coded in the teacher identification area of the op scan sheet.) The teacher source code would be used for a specialist who is in charge of a reading or mathematics laboratory while the student receives instruction in that laboratory. A student teacher's instructor moves would be coded for a teacher source if that student teacher is placed in charg of the class. Similarly, a substitute teacher's instructional moves are coded for a teacher source, because substitute teachers are put in charge of the class. Generally, only one person can be in charge of a class at a time. However, in some team teaching situations two persons could be in charge of the same group of students at the same time.

Several examples of the coding of the teacher source are presented in the preceding discussion of instructor moves. However, one instance warrants reiteration. During the time that a student is examining the teacher's written corrections of that student's work, academic feedback is coded as the instructor move, teacher is coded as the source of that move, and the target student is coded as the focus. Therefore, it is possible for the teacher to be the source of an instructor move at a moment when he/she is not present (but his/her written feedback is present).

The other adult source code is used in the same way as the teacher source code, except that other adult refers to any adult who is not in charge of the class (and provides an instructor move). This might refer to a student teacher, a teacher's aide, or a parent volunteer. The other adult code will usually refer to non-certificated personnel.

The student source code is used for instructor moves provided to the target student by another student. The most obvious example of this is the tutoring situation, where another student is acting as the instructor for the target student. However, the examples discussed in the preceding section on instructor moves illustrate several cases where a student would be coded as the source of an instructor move even though the teacher is leading the instructional activity. For example, when the target student reads along silently as another student reads aloud, then the other student is coded as the source of academic feedback for the target student who is reading silently (group is coded as the focus). Another example is the situation where another student has been asked by the teacher to give the answer to a reading or mathematics problem. This is coded as academic feedback from the other student (source) to the group (focus).

It should be noted that when the target student is providing instruction to one or more other students, the target student's instructor move is not coded as an instructor move for the target. That is, a target student cannot be the source of his/her own instructor move. However, the instructor move by the target student would be coded as a learner move of the target student. For example, while the target student is reading orally and other students are reading along silently, the oral reading of the target student is academic feedback to the other students who are reading silently. However, this oral reading is coded as an engaged-oral learner move for the target student. Note that the target student would generally be receiving continuous academic feedback from the teacher (implicit or explicit) while reading orally.

The curriculum source code is used only for the instructor move, academic feedback, when that feedback is provided by curriculum materials. This usually occurs when the student is checking his/her work against answers provided in the back of a textbook. While the student is checking answers provided by the curriculum, academic feedback is coded as the instructor move, curriculum is coded as the source, and group is coded as the focus. Note that group will almost always be the focus of academic feedback from the curriculum. This procedure is followed because the curriculum feedback is not designed for the particular responses of the target student per se. Rather, the curriculum feedback is equally appropriate for any student in the group. The unusual exception to this guideline occurs when a teaching machine is used to provide feedback according to the particular responses indicated by the individual student.

It should be noted that curriculum feedback can be coded for teacher-made curriculum materials. Therefore, when the teacher writes out the answer to a seatwork ditto and posts those answers, this is coded for a curriculum source. While the target student is checking his work against this posted list of correct answers, academic feedback is coded with a curriculum source and a group focus. As discussed previously, if the teacher corrects the target student's work individually, then the academic feedback is coded with a teacher source and target focus (during the time that the target is examining his/her corrected paper).

IV. F. 3. Focus.

The focus of an instructor move is coded as a means of providing a general indication of the extent to which an instructor move is designed for the particular needs of the target student. Focus also provides some indication of the probable level of student attention to the instructor move. That is, when the target student is the focus of an instructor move, that move will generally be designed according to the particular needs of that student at that time. In addition, the student is likely to attend relatively carefully to an instructor move that is directed to him/her in particular. An instructor move with a group focus, however, will usually be designed for the group as a whole, not the target student per se. In addition, the target student may not concentrate as intently when the instructor move applies to the entire group. For example, when the teacher asks an academic question directed to an entire group, then it is unlikely that the teacher had the target student in mind when formulating the question. In addition, the target student knows that another student will probably answer the question, so that the target student need not be too concerned with determining the correct answer.

The target code for focus is used when an instructor move is directed specifically to the individual target student being observed. The preceding sections on instructor moves and sources of instructor moves provide numerous examples for the coding of the target focus. Perhaps the narrowest distinction between target and group focus is illustrated by the contrast between the written corrections of a student worksheet provided by the teacher and the written list of the correct worksheet answers posted by the teacher for the entire class. The academic feedback in the first case is designed according to the actual responses of the target student in particular, so the target student is coded as the focus. The group is coded as the focus in the second case because the list of correct answers applies equally to any of the students. (Note also that the first case is coded with a teacher source, whereas the second case has a curriculum source.)

The group code for focus is used when an instructor move is directed to the group of the target student. Several examples of coding the group focus are provided in the preceding sections. It is important to note that an instructor move directed toward the target student's group is coded only if it is relevant to the target student. Therefore, if the target student ignores a teacher's explanation to the class, continuing instead to work on a seatwork task (an engaged learner move), then the instructor move (explanation) is not coded. The target student, in this example, must be coded as engaged but cannot be coded as engaged in an instructor move that he/she ignores, even if that instructor move is directed to his/her group. Consider also the case where the teacher provides an explanation designed for the immediate need (resolving some confusion) of most of the students in the class. If the target student does not share this need (the confusion), but attends to the explanation, then explanation-planned is coded for the target student, even though explanation-need would be coded for other students in the group (group would be coded as the focus in either case). However, if it is not clear that the target student already understood the matter explained by the teacher, then explanation-need would be coded for the target student as a member of the group receivng an explanation directed toward the need of that group. One last example involves task engagement feedback. As discussed previously, if the teacher directs task engagement feedback to the target student's group, but it is clear that this feedback does not pertain to the target student, then no instructor move is coded for the target.

G. Learner move-instructor move sequences.

As discussed at several points in this manual, it is essential to this observation system that all the codes within a single event be meaningfully interrelated. It is particularly important to code instructor moves that are meaningfully related to the learner move of the same event. Therefore, if the student is coded as not engaged, then an instructor move coded for the same event must be ignored by the student (not engaged). As discussed previously, task engagement feedback moves are coded according to a different procedure, where the learner move represents that student behavior to which the task engagement feedback is directed.

The importance of this procedure (coding learner and instructor moves that are meaningfully interrelated within the same event) lies in the fact that instructional interaction between the student and the teacher can be represented with this procedure. Thus, a learner move-instructor move sequence is implied when both moves are coded within the same event. If engaged-oral is coded with academic feedback, the the implied sequence is a student oral response followed by teacher feedback. If engaged-covert is coded with academic feedback, then the feedback (to which the student is listening silently) must pertain to student responses that occurred previously, because a covert student move would not enable the teacher to provide direct feedback. The engaged-covert and academic feedback sequence would occur when the student is examining a corrected paper returned by the teacher.

In many cases a learner-instructor sequence of interrelated moves will involve several categories of learner moves and/or several categories of instructor moves. When all of these moves are directly interrelated, then it is inappropriate to simply code the moves that occur at the moment sampled for observation. Rather, the coding should represent the learner-instructor interaction that is ongoing at the moment sampled. This is accomplished by coding the most important learner and instructor moves from the sequence, as determined according to the hierarchical priorities described below. Note that when two moves are of equal importance in the hierarchy and both occur within the same sequence, then the move that is closer to the moment sampled is the one to be coded.

The hierarchy for learner moves gives the highest priority to engaged-written and engaged-oral, where these two moves are given equal priority. Next in the hierarchy is engaged-covert. Below engaged-covert is engaged-directions. Lowest in the learner move hierarchy are the three not engaged moves (interim, waiting, and off task), each of which is equal in the hierarchy. (Note that specific examples have been discussed previously, illustrating which not engaged move should be coded in particular situations. See the discussions of the three not engaged learner moves.)

As an example of the application of the learner move hierarchy, consider the sequence where the target student answers a question orally and then listens to the teacher's academic feedback. Both engaged-oral and engaged-covert have occurred in this sequence. Engaged-oral is coded even if the student is listening at the moment sampled, because the student's oral response was part of the same sequence and is of a higher priority than the listening.

The hierarchy of instructor moves gives the highest priority to explanation-need. Next in priority is explanation-planned. Below explanation-planned are academic feedback and academic question, these two moves being given equal priority Next in the hierarchy is academic observation. Lowest in the hierachy is structure direct. Note that task engagement feedback is not part of this hierarchy. This instructor move is not considered to be sequentially related to the other instructor moves. Therefore, task engagement feedback is only coded when it occurs at the moment sampled. (See the examples for task engagement feedback in the preceding discussion.)

A common example of an instructional sequence to which this hierarchy must be applied is that where the teacher observes the academic response of a target student, recognizes an error, asks a question pertaining to that error, provides feedback after the student answers the question, and gives an explanation of the problem because the student does not understand it. This is a long sequence involving several instructor moves. However, the instructor move coded for any moment sampled within this sequence would be explanation-need, the highest priority move in the sequence.

The observer should be aware that this procedure may require observation of a sequence beyond the moment sampled in order to identify the highest priority move of the sequence. However, in the example above, the observer would know that explanation-need should be coded as soon as that instructor move occurs, because no instructor move of a higher priority is possible. If the same sequence is sampled again on the next cycle, then the observer will already know that the instructor move coded for the sequence is explanation-need.

V. Checklist for coding-error control.

Check each at the end of every observation day:

A. Accurate completion of identification information:

1. Page numbering
2. Observer ID number
3. Date of observation
4. Teacher ID number
5. Grade level (2 or 5)

B. Accurate completion of time information:

1. Number of events per student per page.
2. Number of minutes per page.
3. Stop time = start time for sequential pages.

C. Accurate completion of event coding:

1. All routine periods and major activities, such as recesses, lunch, class periods by content, special assemblies, etc.
2. Equal number of events per student per page.
3. Only a single letter coded for any general content event (W, T, M, B, N, or O).
4. For any reading or mathematics event, each of the following must be coded:
   reading or mathematics content, setting, difficulty, and learner move.
5. Whenever an instructor move is part of an event, each of the following must be coded:
   the four codes listed in item 4 above, the instructor move, its source, and its focus.
6. Only one code per field per event (fields are divided by vertical lines).

VI. Glossary.

VI. A. Grade two reading chart.

Glossary Definitions			Observation Codes
DECODING	Single consonants	1	DC
	Consonant blends & digraphs	2	DC
	Variant consonants (c or g)	3	DC
	Short vowels	4	DC
	Long vowels	5	DC
	Other decoding	6	DC
WORD STRUCTURE	Compound words	7	WS
	Root words and affixes	8	WS
	Syllables	9	WS
WORD MEANING	Synonyms	10	WM
	Pronoun reference	11	WM
	Other word meaning	12	WM
COMPREHENSION	Understanding events	13	CP
	Understanding relationships	14	CP
	Identifying main ideas	15	CP
	Other comprehension	16	CP
READING PRACTICE	Sight words (general practice at reading single words)	17	PT
	Oral reading of text	18	PT
	Silent reading of text	19	PT
	Reading in content areas	20	PT
	Listening while reading	21	PT
READING RELATED	Spelling (without specific decoding focus)	22	SP
	Grammar	23	RR
	Creative writing	24	RR
	Study skills	25	RR
	Other (copying, developmental)	26	RB,N

VI. B. Grade two reading definitions.

I. DECODING - Learning letter-sound correspondences

A number of different tasks can be used in exercises aimed at teaching decoding; for example:

a. The child could be asked to give the sound associated with a particular letter or group of letters.

b. The child could be asked to read words with a common sound or with a rhyming pattern.

c. The child could be asked to recognize or identify a word containing a particular sound.

d. The child could be asked to write words with a particular sound. (Spelling or dictation are decoding tasks when they focus on a particular spelling pattern.)

e. The child could be asked to match words containing the same sound.

f. The child could be asked to locate all the words in a list or story which have a particular sound or spelling pattern.

g. Even fill-in-the-blank exercise can be decoding, if the choice the student must make depends on and teaches accurate decoding.

For example:

Mary put the _____________ around the package.

sting
bring
string

What these tasks (and others not listed) have in common is that they pair particular letters or groups of letters with particular sounds and they teacher students to make the association.

Note: Sometimes, particularly in some basal reader programs, students will read single words where the lesson does not focus on a particular spelling-sound correspondence. This would be coded as Sight Words (category 17). See that category for further discussion.

In recording time in decoding, we ask you to identify the type of letter/sound being learned.

1. Single consonants

   Single consonants located in any position in a syllable.

   Examples: /t/ in tan, bat, ate

2. Consonant blends and digraphs

Common combinations of consonants, located in any position in a syllable.

Examples: Blends include st, tr, fl, cr, sp, spr, thr, nd, etc.
as in flower, spread, sand

Digraphs include sh, ch, th, wh as in where, thin, wash.

3. Variant consonants (c or g)

Most consonants have one dominant letter-sound correspondence. Some consonants are variable; they have 2 common patterns.

Examples: cat vs. city; goat vs. gentle

Tasks: To fall in this category, teaching tasks should compare and contrast the two decodings of the same letter. The student might have to decide which sound was appropriate in a particular word, or with a particular vowel following the consonant (ca, vs. ci).

4. Short vowels

Regular short vowel sounds of a, e, i, o, u.

Examples: bat, red, sick, pond, fun

5. Long vowels

Regular long vowel sounds of a, e, i, o, u.
Two major types of spelling patterns produce these sounds - final e and digraphs.

Examples: bake; rain
these; mean, feet
fine,
pole; boat
huge;

6. Other decoding

Besides the basic categories above, other specific decoding patterns might be taught.

Examples: Complex vowel combinations such as dipthongs (oi, ou, oo, aw, etc.)
Sounds of "y" as a vowel (as in cry, candy)
Effects of consonant context on vowel decoding (vowels followed by "r," as in cart or fair; vowels followed by "l," as in tall)
Silent consonants (know, ghost)
Etc.

II. WORD STRUCTURE - Analysis and meaning of word parts

7. Compound words

Two meaningful words are combined to form a new word, which takes its meaning from the parts.

Examples: mailbox, goldfish

Tasks: Students might be asked to identify the parts, combine parts to create new words, or identify words which are compounds.

8. Root words and affixes

Prefixes and/or suffixes are added to a root word.

Examples: Grammatical endings like -s, -ed, -ing
Suffixes like -ly, -ful, -less, -y, -er
Prefixes like re-, un-

play, played, playful, replay

(Includes spelling changes like doubling the consonant, dropping the final e, or changing y to i. Also includes irregular forms like go, goes, went, gone, going.)

Tasks: Students might have to identify root words, identify affixes in words, or add affixes to words. Includes work on the meaning of affixes and on the correct use of word forms. (John is ________________ up the street.)
walk/walked/walking

9. Syllables

Conventional or sound-based units rather than meaningful units.

Examples: window = win dow (2 syllables)

Tasks: Identifying first syllable, last syllable, all syllables, or number of syllables.

III. WORD MEANING - Understanding the meaning of a specific word or phrase

10. Synonyms

Two words which mean about the same thing.

Examples: little = small; everyone = all

Tasks: Students might be asked to name a word that means the same thing as another word. Or students might be asked to match words that are synonyms.

11. Pronoun reference

The meaning of a pronoun comes from the noun to which it refers.

Examples: Lisa tried to open the window.
It was stuck.
(What does "it" mean? window)

Tasks: The student might be asked to identify the noun a pronoun refers to (as above). Or the student might be asked to fill in the appropriate pronoun for an incomplete sentence. (John handed the teacher ___________ homework paper.)
his/her/its

12. Other word meaning

Meanings of words alone or in the context of a sentence.

Examples: Definitions (a city is a big place with lots of people and buildings in it).

Defining words from context (using the meaning of a sentence to figure out the meaning of an unfamiliar word or a word with multiple meanings).

Using a particular word in a sentence (writing a sentence that shows the meaning of a new vocabulary word).

Antonyms (words opposite in meaning).

Classification of words (apples, oranges, and peaches are fruit).

Tasks: The student might be asked to give the meaning of a word, match a word with its definition, or write a sentence using a particular word.

IV. COMPREHENSION - Understanding of ideas expressed in written material

The story below will be referred to in the examples of the comprehension categories. Time spent reading the story would be coded in Reading Practice. Time spent answering questions would be coded in Comprehension.

> Oh, how Peter wished he could whistle! Peter saw his friend Sam playing with a dog. Whenever Sam whistled, the dog ran straight to him. Peter wished he could do that trick with his own dog, Willie. Peter tried and tried to whistle, but he just couldn't.
>
> Peter went into his house and put on his father's old hat, to make himself feel more grown-up. He looked into the mirror to practice whistling. Still no whistle!
>
> The next day Peter went outside to play. He sat on the front steps and tried to whistle. Then Peter saw his dog coming. Quick as a wink, Peter hid behind the stairs. He

wanted to surprise Willie with a whistle. Peter puffed up his cheeks. He blew and blew and blew. Suddenly, out came a real whistle. Willie stopped and looked around to see who was making the noise.

"It's me," Peter shouted. He jumped out from behind the stairs. Willie raced straight up to him. Peter was delighted.

13. Understanding events

Understanding and remembering what happened in a story, including actions, characters, descriptions, and settings.

Examples: What did Peter want to do? (whistle)
Who came running when Sam whistled? (his dog)
Where did Peter hide? (behind his front steps)
How did Peter feel when Willie raced up to him? (happy)

14. Understanding relationships

Understanding and remembering temporal sequences or cause and effect relationships.

Examples: Putting events in order: What happened first?

a. Peter hid behind the stairs.
b. Peter saw Sam whistle.
c. Peter whistled to call Willie.
d. Peter looked in the mirror and tried to whistle.

Why did Peter put on his father's hat? (to feel grown up)
Why did Peter hide? (so he could surprise Willie)

15. Identifying main ideas

Recognizing the topic of a passage, what the story is all about. Identifying and understanding the central or most important ideas that are being communicated.

Examples: What is this story mainly about?

a. how to train your dog
b. a boy and his dog
c. playing tricks on people
d. Peter learns to whistle

What lesson could you learn from this story?
(keep trying and you'll succeed)

16. Other comprehension

The comprehension categories above refer primarily to the student's understanding of a story he reads. Other types of comprehension of verbal material could also occur. Or sometimes a discussion about the meaning of a story might mix the three types of comprehension so thoroughly that it would be impossible to separate the time. If a comprehension activity does not fall in any of the more specific categories, code it as "other."

Examples: Following directions

Application of reading skills to real-world materials like signs, menus, TV schedules, etc.

Ordering words to express a complete thought

(to camp Helen went for a week)
= Helen went to camp for a week.

Having a student retell a story in his own words, if the retelling includes events, relationships, and main ideas.

Picture interpretation to aid comprehension. ("Look at the picture. What do you think the story is going to be about?")

V. READING PRACTICE - Practice in reading

Note: All reading activities involve the act of reading. Use these Practice categories only for activities where students spend time just reading. We will automatically assume that time in specific skills (decoding, word structure, word meaning, or comprehension) includes some reading practice as well.

17. Sight words

General practice at reading single words. No particular decoding focus. Students must integrate a variety of decoding skills in order to read a word on sight.

Tasks: Students read these words at the beginning of a lesson:

slippers bought hurry etc.

Teacher reads a word and the students must circle it:

watch was what
liver lives silver

Any word reading task where there is no intent to practice specific decoding patterns.

18. Oral reading of text

Individual or choral reading of stories by students.

Tasks: Reading circle where students take turns reading aloud from a story.

19. Silent reading of text

The student reads a story to himself.

Tasks: Students have time for independent reading. Each student reads to himself. Students might go to the library and read. A student might read when he finishes other work early.

20. Reading in content areas

Reading science or social studies material (oral or silent)

Tasks: The students read silently in the social studies book. The students take turns reading aloud from the Weekly Reader.

21. Listening while reading

The student listens while he reads in an accompanying text.

Tasks: The student must be simultaneously reading and listening. He could be listening to a tape or record of a story and reading along. Includes music if the student is both reading and singing.

IV. READING RELATED - Language arts and study skills

22. Spelling

Writing words or sentences dictated by the teacher. No particular decoding focus.

Tasks: The teacher reads a word or sentence and the students write it. There is no intent to practice specific decoding patterns, just a general collection of words.

23. Grammar

Understanding sentence structure and grammatical form.

Examples: Capitalization, punctuation, parts of speech

Tasks: Many possible activities involving grammatical concepts.

24. Creative writing

Students make up their own stories and write them.

Tasks: The teacher might have all students write a story about summer vacation. Or students might write their own endings to a story they have been reading.

25. Study skills

Learning and using skills that help the student acquire knowledge through reading.

Examples: Dictionary skills, alphabetization, table of contents, using the index, using the encyclopedia, card catalog, finding books in the library

26. Other

Other activities which are related to reading and learning to read.

Examples: Copying, where the student directly copies letters, words, or sentences. Includes penmanship exercises.

Developmental activities like visual or auditory discrimination.

The teacher reading a story to the class to promote interest in reading.

Students listening to a tape without reading along.

CONTEXT CLUES--A COMMON FORMAT

A common response format in workbook pages, especially at grade 2, is to ask the student to fill in the blank to complete a sentence. To perform the task the student must read the sentence parts that are given and understand their meaning in order to recognize the element that would complete the thought. He must use the context as a set of clues which define the nature of the missing piece. Understanding the sentence framework is a comprehension process. But the task also involves selecting the best word(s) to fill the blank, and the nature of the choices is critical. To code the content of items in a context clues format, consider the distinctions the child must make in order to select the correct alternative.

The examples below show some of the different ways a context clues format can be used:

Decoding:

Jane ate a red candy _______________.
cane / can

Here the student must not only understand the sentence but also know the role of final e in decoding vowels. Without this knowledge of decoding patterns, the child might know the word he wants to fill the blank but still select the wrong alternative. The purpose of the exercise is to practice decoding rules. This exercise would be coded as Long Vowel Decoding (category #5).

Word Structure:

Tim went _________ down the street.
skip
skips
skipping

This exercise teaches correct use of grammatical endings; coded as category #8.

Word Meaning:

Susan ran to her house. Then _____ went inside.
she
he
it

Coded as Pronoun Reference (category #11).

Some animals have snouts. They are really long _________.
ears
mouths
noses

Because the ocean roars, we need to ________
to be heard.
talk
shout
whisper

In the two examples above, the emphasis is on the meaning of the missing word. The student must consider the semantic distinctions among the choices in order to select the word with the best meaning to complete the sentence. Coded as Other Word Meaning (category #12).

Choose from these words to complete the sentence below:

lazy dozing buzzed dizzy grazing

Soon, a bee ___________ around the colt's head.

In this example the word choices all have the letter "z". But this decoding element is a constant factor; students don't have to focus on the decoding in order to complete the sentence. Sentence completion focuses on selecting the word with the best meaning. This would be coded as Other Word Meaning (category #12). (Note: Time spent reading the word choices and talking about the sound of the letter "z" in these words would be coded as Single Consonants, category #3.)

Comprehension:

After reading the story of the Little Red Hen, the student must complete this sentence:

The fox lived in a house made of _________.
straw
wood
stones

The purpose of questions like this is to check story comprehension; the correct answer depends on having read the story. This question assesses understanding of event detail (category #13).

Sight Words:

Goats like to eat _________.
green
grass
great

Like the example under Decoding, this example emphasizes careful word reading to select the correct alternative. But it does not focus on any one pattern or decoding rule; it requires integration of a number of aspects of decoding. It is therefore coded as Sight Words (category #17).

VI. C. Grade two mathematics chart.

GLOSSARY DEFINITIONS			Observation Codes	
COMPUTATION	Addition/Subtraction No Regrouping - Standard Short Form	1	AS	
	Addition/Subtraction No Regrouping - Instructional Algorithms with Place Value Transformations	2	PV	
	Addition/Subtraction With Regrouping - Standard Short Form	3	RG	
	Addition/Subtraction With Regrouping - Instructional Algorithms with Place Value Transformations	4	PV	
	Speed Tests	5	AS	Possible RG but improbab
	Other	6	MU, AS	Possible DI or RG
CONCEPTS/ APPLICATION	Computational Transfer (properties, no. patterns, missing addends, number sentences with inequalities)	7	CT	
	Place Value/Numerals	8	PV	
	Word Problems	9	VA	
	Money	10	MR	
	Linear Measurement	11	SA	
	Fractions	12	FR	
	Developmental Activities	13	MB	
	Other	14	SA,MR	

VI. D. Grade two mathematics definitions.

1. Addition/Subtraction no Regrouping - Standard Short Form

Learning the basic addition and subtraction facts. Finding the sum or difference of problems which do not require the renaming of 10 ones as 1 ten or 1 ten as 10 ones (i.e. no "carrying" or "borrowing").

Includes:

A. Basic facts: Basic addition facts are the sums of two single digit addends up through 9 + 9. The basic subtraction facts are the inverses of the addition facts and therefore include facts up through 18-9.

B. Non regrouping problems in addition: Sums of a single digit and a multiple digit addend or two or more multiple digit addends which do not require the renaming of 10 ones as 1 ten.

$$\begin{array}{r} 10 \\ +\ 5 \\ \hline \end{array} \qquad \begin{array}{r} 23 \\ +\ 46 \\ \hline \end{array} \qquad \begin{array}{r} 547 \\ +\ 201 \\ \hline \end{array}$$

Includes column addition without regrouping.

$$\begin{array}{r} 6 \\ 4 \\ +\ 5 \\ \hline \end{array} \qquad \begin{array}{r} 20 \\ 30 \\ +\ 10 \\ \hline \end{array} \qquad \begin{array}{r} 21 \\ 13 \\ +\ 15 \\ \hline \end{array}$$

C. Non-regrouping problems in subtraction: Finding the difference between a single digit and a multiple digit number or the difference between two multiple digit numbers which do not require the renaming of 1 ten as 10 ones.

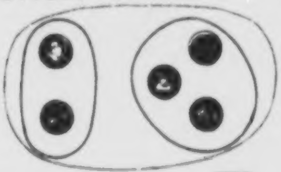
$$\begin{array}{r} 27 \\ -\ \ 7 \\ \hline \end{array} \qquad \begin{array}{r} 48 \\ -\ 14 \\ \hline \end{array} \qquad \begin{array}{r} 532 \\ -\ 420 \\ \hline \end{array}$$

Note: Problems in this category can be presented in a variety of formats.

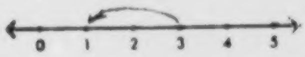
The problem may be laid out horizontally or vertically:

$$\begin{array}{r} 2 \\ +\ 3 \\ \hline \end{array} \qquad \begin{array}{r} 3 \\ -\ 2 \\ \hline \end{array} \qquad 2 + 3 = \_\_\_ \qquad 3 - 2 = \_\_\_$$

Pictorial representation may be used to help the students understand the basic processes of joining or separating sets and/or as an aid in carrying out the computation involved:



$2 + 3 = \square$



$3 - 2 = \square$

In all of the examples above, the primary task is to find the sum or difference between two numbers when both of those numbers as well as the applicable operational sign are given.

However, there are situations where instructional algorithms or processes involving place value concepts are used in the teaching of these same computational skills and when this occurs the instruction should be coded under category #2 (see section #2).

There are other situations which require more than the straightforward computation of a sum of difference (but do not involve place value) and these situations are discussed in the Computational Transfer Section (#7).

2. Addition/Subtraction no Regrouping- Instuctional Algorithms With Place Value Transformations:

In our base 10 number system the understanding of place value is essential to the learning of computational skills. With this in mind, curriculum materials often include instructional algorithms or processes which combine place value concepts along with practice in computation. These processes may involve expanded notation or the designation of tens and ones. Some common (depending on text) instructional algorithms are:

$$\begin{array}{rcl} 14 & = & 10 + 4 \\ \underline{+\ 14} & = & \underline{10 + 4} \\ & & 20 + 8 = 28 \end{array}$$

(Use of Expanded Notation)

$$\begin{array}{rcc|c} & & \text{TENS} & \text{ONES} \\ 14 & = & 1 & 4 \\ \underline{+\ 14} & = & 1 & 4 \\ \hline & & 2 & 8 \end{array}$$

(Designation of ten's and one's place)

$$\begin{array}{r} 14 \\ \underline{+\ 14} \\ 8 \\ \underline{20} \\ 28 \end{array}$$

(Long form with partial addends)

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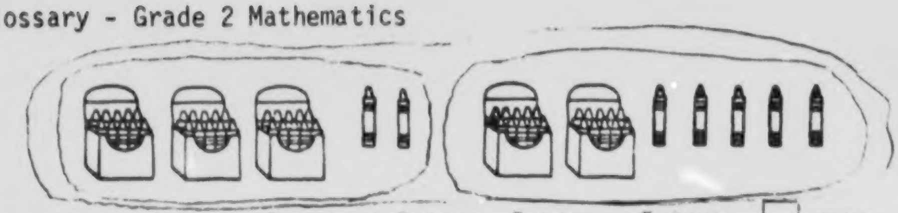


3 tens 2 ones + 2 tens 5 ones = 5 tens $\boxed{}$ ones

$\boxed{}$ + $\boxed{}$ = $\boxed{}$

3. Addition/Subtraction with Regrouping - Standard Short Form

Addition problems which require the renaming of 10 ones as 1 ten ("carrying") and subtraction problems which require the renaming of 1 ten as 10 ones ("borrowing"). Here we want to include only the regrouping problems which are presented in the standard computational algorithmic format, also known as the short form.

$27 + 3 = \boxed{}$

$$\begin{array}{r} 18 \\ +\ 14 \\ \hline 32 \end{array} \qquad \begin{array}{r} 13 \\ 15 \\ +\ 16 \\ \hline 44 \end{array} \qquad \begin{array}{r} 26 \\ -\ 9 \\ \hline 17 \end{array} \qquad \begin{array}{r} 40 \\ -\ 15 \\ \hline 25 \end{array}$$

This category is parallel to category #1 in that the student is given two numbers and told to find their sum or difference but in this case the problems also require regrouping. The general guidelines on format in category #1 also apply to this category.

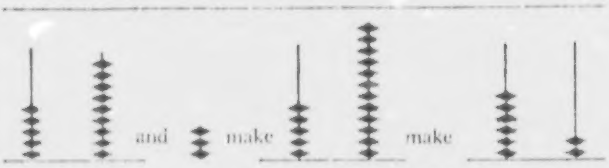
4. Addition/Subtraction with Regrouping - Instructional Algorithms With Place Value Transformations:

Regrouping problems in a format which includes place value concepts. Here the instructional algorithms help explain the regrouping processes which underlies the "carrying" and "borrowing" techniques used in the standard short form.

Examples:

$$\begin{array}{rcl} 16 & = & 10 + 6 \\ +\ 14 & = & 10 + 4 \\ \hline & & 20 + 10 \ = 30 \end{array} \qquad \begin{array}{r} 16 \\ +\ 14 \\ \hline 10 \\ 20 \\ \hline 30 \end{array}$$

$$\begin{array}{r} 16 \\ +\ 14 \\ \hline \end{array} \qquad \begin{array}{c|c} \text{TENS} & \text{ONES} \\ 1 & 6 \\ 1 & 4 \\ \hline 3 & 0 \end{array}$$



5 tens 9 ones + 3 ones = 5 tens + 12 ones = ☐ tens ☐ ones

59 + 3 = ☐ + ☐ = ☐

$$\begin{array}{rcrcr} 32 & = & 30 + 2 & = & 20 + 12 \\ \underline{-\ 16} & = & \underline{-10 - 6} & = & \underline{-10 - \ 6} \\ & & & & 10 + \ 6 = 16 \end{array}$$

$$\begin{array}{rcl} 32 & = & 20 + 12 \\ \underline{-\ 16} & = & \underline{-10 - \ 6} \\ & & 10 + \ 6 = 16 \end{array}$$

5. Speed tests - Timed speed tests in addition and subtraction. May also include speeded flash card drill which is specifically aimed at increasing automaticity. Code ACTUAL TIME ONLY. That is for a one minute speed test code 1 minute to speed tests. Code any time in preparation, scoring or collecting tests to other computation (#6).

6. Other Computation - Computation not covered by codes 1 through 5, such as multiplication, division, or time in category #5 exclusive of actual speed test time. Please include descriptive note when coding time to this category.

7. Computational Transfer - Tasks which require the student to recognize and apply some of the operational concepts and patterns within our number system. The student must understand and use the operations which underlie computation, but in a format which involves more than straight-forward computation. Includes:

   A. Properties:

      1. Commutative property of addition and multiplication

         3 + 2 = 2 + 3

         2 x 3 = 3 x 2

      2. Associative (grouping) property of addition.

         2 + (3+5) = (2+3) + 5

      3. Properties of zero.

         Identity element of addition: 18 + 0 = 18
         Inverse relationship in subtraction: 18 - 18 = 0

B. Number Patterns: Tasks which promote the student's search for and recognition of the various patterns which can be found among numbers.

Examples:

1. Counting by 2's (odd and even numbers).
2. Counting by 5's, 10's, 20's, etc.
3. Functions - discovering or applying a function rule like add 3, subtract 2, etc.
   a. Rule is given:

+	2	5	7	9
4	6			

   b. Student must discover and apply the rule to complete the pattern.

1	3	8	4
4	6	11	?

7, 5, 3, ?

$\{(1,2), (2,4), (3,6), (4,?)\}$

C. Missing Addends - Open sentences: Number sentences in which the sum or difference is given and one of the addends or numbers is unknown.

Examples:

$\begin{array}{r}\square\\+\ 3\\\hline 7\end{array}$ $\begin{array}{r}4\\+\ \square\\\hline 7\end{array}$

$\square - 5 = 5$

$5 - \square = 2$

$\begin{array}{r}\square\\-\ 3\\\hline 4\end{array}$ $\begin{array}{r}7\\-\ \square\\\hline 3\end{array}$

$\square + 6 = 10$

$4 + \square = 10$

D. Number Sentences With Equalities and Inequalities - Includes only those number sentences that involve computation plus the use of >, <, =, +, -.

7 - 6 ⧀ 1 + 3

7 ⧁ 4 - 3

10 + 10 ⊜ 15 + 5

7 ⨺ 2 = 5

8 ⨹ 3 = 11

This category does not include the use of inequality signs in numerical comparisons. i.e.

27 > 26
127 > 126 } This should be coded as #8 numerals

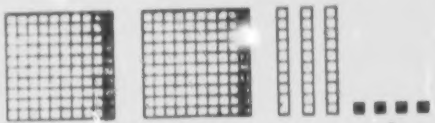
8. Place Value/Numerals - Place value involves the concept that a digit has three meanings: It's face value (the meaning it has wherever it is used), it's place value (the meaning it takes from it's place in a numeral), and it's total value (which is the product of the first two values). In the numeral 45, the 4 has a face value of four, a place value of ten, and a total value of forty. Teaching place value will involve expanded and compact notation, identification of the one's, ten's, or hundred's place, and naming the number of tens (or ones, etc) in a numeral.

Numerals includes understanding the order of the counting numbers and evaluating the sequential position of one numeral in relation to another. Comparing and evaluating numerals will involve place value concepts.

Examples:

A. Place Value:

1. How many tens in 75?
2. Which number is in the one's place?
3. 6 tens and 2 ones = 60 + 2 = 62
4. 155 = 100 + 50 + 5
5. Use of manipulatives or pictures to teach numerical structures.



2 hundreds, 3 tens, and 4

We write 234.

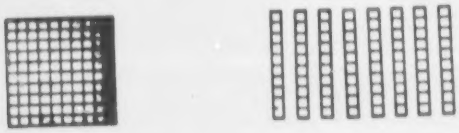
B. Numerals:

1. Writing the missing numerals.

46			49	

2. What number comes before, after, or between?
3. Using inequalities: 145 > 135.
4. Comparing sets of objects. e.g.

Put an X through the smallest set.



9. Word Problems - Solving simple word problems (usually one-step) involving addition, subtraction, the joining or partitioning of sets, time, and money.

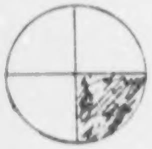
10. Money - Identifying coins, the sum of a set of coins, and equivalent values of coins. Using coins for practice in addition, subtraction, and understanding the decimal system.

11. Linear Measurement - Measuring the length, width, or height of objects, lines, or pictures.

12. Fractions - Recognizing and identifying a fractional part of a set, region, or line.

Examples:

a. Draw a ring around 1/3 of the trees.

b.  What part of this region is shaded?

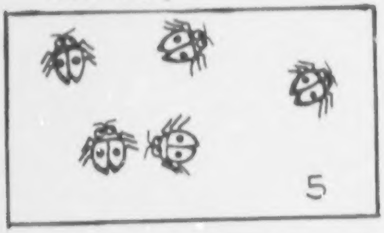
13. Developmental Activities - Activities which do not involve computation but do promote the development of concepts which are considered preliminary to the understanding and use of operational concepts. Includes:

A. Review of basic number concepts such as learning the number name for a set of objects less than 10, learning to count and write the numbers from 0 to 10, one to one matching and recognition of equivalent sets.

Examples:

three		3 3 3 3

How many?



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B. Activities which provide experiences (most often with concrete materials) in recognizing likenesses and differences, sorting, ordering, comparing, and matching.

Examples: Attribute blocks or games
Pattern blocks
Tangrams
Geoboards
Geoblocks
Soma cube puzzles

14. Other Concepts - Curriculum objectives involving mathematical concepts or application not covered in codes 7 through 13. Please include descriptive note when coding thime to this category.

Examples: Ordinals (first, second, third, etc.)
Geometry - figures, lines, points
Nonlinear Measurement - liquid, weight, time

VI. E. Grade five reading chart.

Glossary Definitions			Observation Codes
WORD STRUCTURE	Root words and affixes	1	WS
	Syllables	2	WS
WORD MEANING	Synonyms	3	WM
	Pronoun reference	4	WM
	Other word meaning	5	WM
COMPREHENSION	Verbatim (no rephrasing)	6	CP
	Translation (paraphrase)	7	CP
	Inference/Synthesis	8	CP
	Identifying main ideas	9	CP
	Evaluation of fact and opinion	10	CP
	Other comprehension	11	CP
READING PRACTICE	Oral reading	12	PT
	Silent reading	13	PT
	Reading in content areas	14	PT
READING RELATED	Spelling	15	SP, DC
	Grammar	16	RR
	Creative writing	17	RR
	Study skills	18	RR
	Other	19	RR, RB, O,N

VI. F. Grade five reading definitions.

I. WORD STRUCTURE - Analysis and meaning of word parts

1. Root words and affixes

Prefixes and/or suffixes added to a root word

Examples: suffixes like -ly, -ful, -less, -able, -er, -est, -tion, etc.

prefixes like un-, re-, mis-, trans-, pre-, ex-, in-, etc.

grammatical endings like -s, -ed, -ing

Tasks: Students might have to identify root words, identify affixes in words, or add affixes to root words. Includes work on the meaning of prefixes, suffixes, and root words. The student might have to decide which prefix or suffix was needed to create a particular meaning, or the student might have to figure out the meaning of a word from the meaning of the parts. Also includes work on using the correct form of a word in the context of a sentence.

2. Syllables

Conventional or sound-based units rather than meaningful units.

Examples: demonstration = dem on stra' tion (4 syllables)

Tasks: Students might have to identify the first or last syllable in a word, or break a word into syllables, or determine the number of syllables in a word. Includes work on locating the accent or stress in a word.

II. WORD MEANING - Understanding the meaning of a specific word or phrase

3. Synonyms

Two words which mean about the same thing

Examples: vibrating ship = shaking ship
discover a cave = find a cave

Tasks: Students might be asked to name a word that means the same thing as another word. Or students might be asked to match words that are synonyms.

4. Pronoun reference

The meaning of a pronoun comes from the noun to which it refers

Examples: Lisa tried to open the window.
It was stuck.
(What does "it" mean? window)

Tasks: The student might be asked to identify the noun a pronoun refers to (as above). Or the student might be asked to fill in the appropriate pronoun for an incomplete sentence. (John handed the teacher ________ homework paper.)
his/her/its

5. Other word meaning

Meanings of words alone or in the context of a sentence

Examples: Definitions, including using dictionary entries to define words

Defining words from context (using the meaning of a sentence to figure out the meaning of an unfamiliar word or a word with multiple meanings)

John used the term "habeas corpus" in his speech about law.

term means

A. a period of time
B. an assigned time to serve
C. a word with an exact meaning
D. a condition or requirement

Using words in sentences (writing a sentence that shows the meaning of a new vocabulary word)

Antonyms (words opposite in meaning)

Figurative Language (recognizing the meaning of a word or phrase used in a nonliteral sense, including simile, metaphor, and idiomatic expressions)

"John laughed his head off."
means "John laughed a lot."

Crossword Puzzles

Tasks: The student might be asked to give the meaning of a word, match a word with its definition, or write a sentence using a word.

III. COMPREHENSION - Understanding of ideas expressed in written material, including understanding of literature and understanding of written material in the content areas (science and social studies).

The story below will be referred to in the examples of the comprehension categories. Time spent reading the story would be coded in Reading Practice. Time spent answering questions, writing about, or discussing the story would be coded in Comprehension.

Saving the Seals

Who owns the sea? The ships of all countries sail the open seas. Not long ago, all countries could fish and hunt in the ocean as they pleased. Now, the countries using the sea must work together to protect the sea's animal life.

In 1870, there were millions of valuable fur seals in the Bering Sea. Ships came from all parts of the world to kill them. Men wanted the animals' fur and the oil from their bodies. By 1910, only about 130,000 seals were left. Even the hunters knew that something had to be done or the seals would disappear.

Four countries owned land near the seals' northern home. In 1911, these countries began plans to control seal-hunting. The governments of Japan, Russia, Canada, and the United States agreed to kill no more seals in the open seas. Because they wanted to protect mother seals and their young, they agreed that only male seals without mates could be killed. Money earned from the skins and oil of these seals was to be divided among the four governments.

Today, large herds of seals swim in the Bering Sea again. By working together, four countries saved the seals in the sea they share.

6. Verbatim (no rephrasing)

Understanding and recall of information exactly as stated in the text.

Examples:
1. Where do large herds of seals swim today? (in the Bering Sea)
2. Which governments agreed to kill no more seals in the open sea? (Japan, Russia, Canada, U.S.)
3. Why did they agree that only male seals without mates could be killed? (to protect mother seals and their young)

Glossary - Grade 5 Reading

7. Translation (paraphrase)

Recognizing ideas stated in different words; recall of information when ideas are restated; rephrasing of ideas in other words.

Examples:
1. Which countries joined in the agreement to limit seal killing? (Japan, Russia, Canada, U.S.)
2. Describe in your own words what the countries agreed to do.

8. Inference/Synthesis

Synthesis of information from different points in a text; understanding of ideas implied by a text; using background knowledge or experience to interpret or extend the ideas in a text; drawing conclusions or predicting outcomes

Examples:
1. Why were the seals hunted?
   a. People wanted to eat seal meat.
   b. Their fur and oil were valuable.
   c. The seals were eating all the fish.
2. The story does not say so, but it makes you think that
   a. hunters used seal oil on their bodies
   b. seals have little value for hunters
   c. all the seals might have been killed
3. What would happen if only 2 of the 4 countries joined the agreement?

9. Identifying main ideas

Recognizing the topic of a passage; identifying and understanding the central or most important ideas being communicated.

Examples:
1. On the whole, this story is about
   a. Russia and Canada
   b. protecting seals
   c. hunting in the Bering Sea
2. What message is the author trying to get across? (It is important to protect animals. Countries need to work together.)

Besides answering questions, this content category includes work on outlining a passage, or recognizing the structure and organization of a passage (superordinate and subordinate elements).

10. Evaluation of fact and opinion

Critical analysis of statements and the basis for their acceptance; identifying fact and opinion statements. Also includes evaluation of the qualifications of a speaker/writer and understanding how "loaded" words convey opinions.

Examples: Which statement is a fact rather than an opinion?

a. Seals should be protected.
b. All the seals very nearly died.
c. In 1910, only about 130,000 seals were left.

11. Other comprehension

Comprehension of written material which does not fit one of the specific categories above. Also includes situations where a comprehension activity mixes several types of comprehension so thoroughly that it would be impossible to separate the time.

Examples: Following directions

Aplication of reading skills to real-world materials like signs, menues, TV schedules, etc.

Dramatics, acting out the meaning of stories.

IV. READING PRACTICE - Practice in reading

Note: All reading activities involve the act of reading. Use these practice categories only for activities where students spend time just reading. We will automatically assume that time spent in specific skills (word structure, word meaning, or comprehension) includes some reading practice as well.

12. Oral reading

Individual or choral oral reading of stories by students

Tasks: Reading circle where students take turns reading aloud from a story.

13. Silent reading

The student reads a story to himself

Tasks: Students have time for independent reading. Each student reads to himself. Students might go to the library and read. A student might read when he finished other work early.

14. Reading in content areas

Reading science or social studies material (oral or silent).

Tasks: The students read silently in the social studies book. The students take turns reading aloud from the Weekly Reader.

V. READING RELATED - Language arts and study skills

15. Spelling

Matching word sounds with particular configurations of letters

Tasks: The teacher might read a word or sentence and have the students write it. Students might have to decide whether or not a word is spelled correctly. Includes work on homonyms (like "to", "too", "two", or "peace", "piece") and their correct use in sentences. Some lessons may focus on particular patterns in letter-sound correspondence (like sounds of the letter "y", or words with silent "e").

16. Grammar

Understanding sentence structure and grammatical form.

Examples: Capitalization, punctuation, parts of speech, diagramming sentences

Tasks: Many possible activities involving grammatical concepts.

17. Creative writing

Students make up their own stories and write them

Tasks: The teacher might have all students write a story about summer vacation. Or students might write their own endings to a story they have been reading.

18. Study skills

Learning and using skills that help the student acquire knowledge through reading.

Examples: Dictionary skills, alphabetization, table of contents, using the index, using the encyclopedia, card catalog, finding books in the library.

19. Other

Other activities which are related to reading.

Examples: Copying, where the student directly copies letters, words, or sentences. Includes penmanship.

Foreign language.

Reading maps or graphs.

The teacher reading a story to the class to promote interest in reading.

VI. G. Grade five mathematics chart.

GLOSSARY DEFINITIONS			Observation Codes	
COMPUTATION	Addition	1	RG,AS	
	Subtraction	2	RG,AS	
	Multiplication - Learning basic facts	3	MU	
	Speed tests in basic facts	4	MU	
	Multiplication algorithm	5	MU	
	Division	6	DI	
	Fractions	7	FR	
	Other	8	MR	possible MU
CONCEPTS/ APPLICATION	Computational Transfer (factors, multiples, number patterns, properties)	9	CT	
	Numerals/Place value (whole numbers)	10	PV	
	Word Problems	11	VA	
	Geometry Perimeter	12	SA	
	Area	13	SA	
	Number pairs	14	SA	
	Lines or figures	15	SA	
	Other	16	SA,MR	possible MB

VI. H. Grade five mathematics definitions.

1. Addition: Addition of whole numbers with or without regrouping. Includes addition speed tests.

2. Subtraction: Subtraction of whole numbers with or without regrouping. Includes speed tests in subtraction.

3. Multiplication - Basic Facts: Multiplication with two 1-digit factors. Also known as times table up through 9 X 9.

4. Multiplication - Speed Tests: Timed tests in the basic multiplication facts. May also include speeded flash card drill which is specifically aimed at increasing automaticity. Code ACTUAL TIME ONLY. That is, for a one minute speed test, code 1 minute to speed tests. Code any time in preparation, scoring, or collecting tests to other computation (#8).

5. Multiplication-Algorithm: Multiplication with one factor of two or more digits, i.e., all multiplication above the basic facts.

6. Division: Division of whole numbers. All levels of difficulty. Includes speed tests in division.

7. Fractions: Computation with fractions including the recognition and identification of equivalent fraction. Does not include identifying the fractional part of a set or region (this should be coded as #16 - other concepts).

8. Other Computation: Computation not covered by codes 1 through 7. Please include descriptive note.

   Examples:

   A. Decimals (addition, subtraction, multiplication or division of),
   B. Computation in a base other than 10.
   C. Time in Category #4 exclusive of actual speed test time.
   D. Computing averages.

9. Computational Transfer:

   Tasks which require the student to understand and use the operations which underlie computation, but in a format which involves more than straightforward computation. Focus here is on the patterns and properties of our number system. Includes:

Glossary - Grade 5 Mathematics

A. Factors and Multiples: The study of common and least common multiples, common factors, sets of factors, prime numbers, and prime factorization.

Examples:

1. 6 X☐ = 42
2. 12 = 2 X 2 X 3
3. Name the multiples of 2, less than 20.

B. Number Patterns: Includes sequences, "magic squares," and functions (set of ordered pairs with a rule).

Examples:

$\{(1,2), (2,4), (3,6), (4,?)\}$

Y	4	16	28	36
Z	1	4	?	9

C. Properties: Includes the associative property of addition and multiplication, the commutative property of addition and multiplication, the distributive property of multiplication and division, identity elements, the properties of zero, and the inverse relation between addition and subtraction and multiplication and division.

Examples: Distributive property

$(7 + 5) \times 6 = (7 \times 6) + (5 \times 6)$

$6 \times (7 + 5) = (6 \times 7) + (6 \times 5)$

$(12 + 6) \div 3 = (12 \div 3) + (6 \div 3)$

10. Numerals/Place Value (whole numbers): Practice in reading numerals up through millions. Understanding the use of commas to set off the periods. Understanding that each digit has three meanings: it's face value (the meaning it has wherever it is used), it's place value (the meaning it takes from it's place in a numeral), and it's total value (the product of the first two values). Therefore, the 6 in 6,042 has a face value of 6, a place value of 1,000, and a total value of 6,000.

11. Word Problems: All types of word problems including word problems with graphs. The coding of word problems is given priority over the specific computation required by the problems. Therefore, regardless of the computation, time on word problems is coded under word problems.

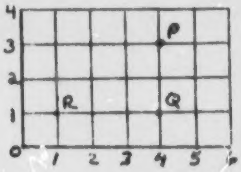
Glossary - Grade 5 Mathematics

12. Geometry - Perimeter: Computing the perimeter of a polygon using standard or arbitrary units of measure.

13. Geometry - Area: Computing the area of a polygon using standard or arbitrary units of measure.

14. Geometry - Number Pairs: Identifying number pairs on a number plane.

Example:



What is the number pair for point Q?

15. Geometry - Lines or Figures:

Recognizing and identifying common lines and plane figures. Includes angles, parallel and perpendicular lines, parallelograms, rectangles, squares, and right triangles. Does not include work with solid figures like spheres, rectangular prisms, etc.

16. Other Concepts: Other concepts and applications not covered by codes 9 through 15.

Examples:

Volume
Solid figures
Liquid or weight measures
Statistics and probability
Constructing line and bar graphs
Set theory, set diagrams, logic
Place value with decimals
Exponents (concepts of)
Averages (concepts of)

Appendix C

Rating Scales Form

DAILY RATING SCALES FOR FIELD OBSERVERS

School____________________

Teacher____________________

Grade____________________

Date____________________

Observer/Rater____________________

1	2	3	4	5	6	7	8	9	0	[1]
1	2	3	4	5	6	7	8	9	0	[2]
	2			5						[3]
A	B									[4]
1	2	3	4	5	6	7	8	9	0	[5]
1	2	3	4	5	6	7	8	9	0	[6]
1	2	3	4	5	6	7	8	9	0	[7]
1	2	3	4	5	6	7	8	9	0	[8]
1	2	3	4	5	6	7	8	9	0	[9]
1	2	3	4	5	6	7	8	9	0	[10]

Directions: Consider today's classroom experience. Concentrate on the interactions (verbal and nonverbal) among the teaching adults and target students during mathematics and reading instruction. Rate the facets of classroom climate, instructional program, teacher presentation and teacher control of student behavior. Indicate your rating by drawing a circle around the appropriate scale point (number). Make only one circle for each scale. In each case, base the rating on today's interaction among the target students, teaching adults, and the instructional program during mathematics and reading periods.

R01

[78-80]

BASED ON TODAY'S OBSERVATION OF MATHEMATICS AND READING INSTRUCTION, RATE THE CLASSROOM CLIMATE ON:

I. COOPERATION

1	2	3	4	5	6	7	[21
	Students compete for materials, attention, and "status".		Students compete in some areas, cooperate in others.		S's help each other, share materials and space; perform tasks together.		

II. STUDENT RESPONSIBILITY

1	2	3	4	5	6	7	[22
	S's take very little responsibility for classwork, belongings or classroom. T often "waits on" S's.		S's take some responsibility for classwork, belongings or classroom.		S's take major responsibility for their classwork, belongings, and classroom.		

III. CONVIVIALITY

1	2	3	4	5	6	7	[2
	Classroom interaction is humorless, cool, sometimes hostile.		Classroom interaction is sometimes friendly, sometimes cool.		Classroom interaction is characterized by warm friendship, smiles, laughter.		

IV. ACCEPTANCE OF FEELINGS

1	2	3	4	5	6	7	[2
	Expression of feelings is discouraged. T and and S feelings are not discussed.		T and S's feelings are occassionally expressed and/or discussed.		T and S's often express and discuss feelings.		

V. COGNITIVE TASK ORIENTATION

1	2	3	4	5	6	7	[
	Very weak emphasis on cognitive tasks. Many S's not "involved" in school work.		Moderate emphasis on cognitive tasks. Some S's "involved" in their work, some are not.		T and S's maintain strong emphasis on cognitive tasks. T and S's "involved" in school work.		

BASED ON TODAY'S OBSERVATION ACTIVITIES, DURING MATHEMATICS AND READING INSTRUCTION RATE THE TEACHER ON:

VI. ATTENTION TO STUDENTS

1	2	3	4	5	6	7	[26]
	T shows lack of involvement, barely attends to S responses and comments.		T shows moderate involvement, usually pays attention to S responses and comments.		T gives a great deal of attention to S responses and comments.		

VII. EXPECTATION OF STUDENT SUCCESS

1	2	3	4	5	6	7	[27]
	T shows negative expectations for academic success of S's.		T indicates no overall expectation for academic success of S's.		T shows positive expectations for academic success of S's.		

VIII. KNOWLEDGE OF MATHEMATICS (PEDAGOGY)

1	2	3	4	5	6	7	[28]
	T demonstrates little knowledge of mathematics.		T demonstrates moderate knowledge of mathematics.		T demonstrates firm grasp of mathematics.		

IX. KNOWLEDGE OF READING (PEDAGOGY)

1	2	3	4	5	6	7	[29]
	T demonstrates little knowledge of reading.		T demonstrates moderate knowledge of reading.		T demonstrates firm grasp of reading.		

BASED ON TODAY'S OBSERVATION ACTIVITIES DURING MATHEMATICS AND READING INSTRUCTION, RATE THE TEACHER ON THE FOLLOWING INSTRUCTIONAL PRESENTATION AND STUDENT CONTROL BEHAVIORS:

X. CLARITY

1	2	3	4	5	6	7	[30]
	T is often not understood by S's. T language is overly complex or ambiguous. S questions do not get adequately answered.		T is understood by pupils about half of the time.		T's communications are understood by S's. S's questions are answered clearly.		

XI. ABRUPTNESS

1	2	3	4	5	6	7	[31]
	Transitions are "smooth".		Transitions are occasionally hurried and/or rough.		T changes from one activity to another frequently and without warning to S's.		

XII. FLEXIBILITY

1	2	3	4	5	6	7	[32]
	Lessons are implemented "without changes".		Daily activities are moderately flexible.		T changes or extends activities to suit today's student moods and other conditions.		

XIII. COMPLEXITY OF COMMUNICATION

1	2	3	4	5	6	7	[33]
	T-S interaction concentrates on factual information. Questions require mostly recall.		T-S interaction contains some higher-order questions. "Hows" and "whys" sometimes called for.		T-S interaction involves high proportion of higher-order questions. S required to apply, interpret, evaluate and synthesize.		

XIV. CONSISTENCY OF MESSAGE

1	2	3	4	5	6	7	[34
	T sets contingencies but "forgets" or changes mind most of the time; or sets no contingencies.		T sets contingencies and carries through about half the time.		T frequently sets and maintains contingencies with individuals and/or groups of students.		

XV. STRUCTURING

1	2	3	4	5	6	7	[35
	Instruction characterized by absence of outlining of content, stating objectives, signaling transitions, indicating important points, reviewing and summarizing.		Instruction sometimes characterized by instances of structuring behavior. Some aspects of structuring may be present and others not present.		Instruction characterized by outlining of content, stating objectives, signaling transitions, indicating important points, reviewing and summarizing.		

Appendix D

Manual for Rating Scales

DAILY RATING SCALES FOR OBSERVERS

The rating scales are designed for the collection of information on classroom interactions affecting the target students. Although large amounts of systematic process information will be collected via the observation, teacher log, and interview procedures, there are a number of global classroom conditions which will be obtained by ratings. The ratings are to be completed after each day of observation by Far West Laboratory field workers. The ratings are high inference measures of 15 facets of classroom climate, instructional programs teacher presentation, and teacher control behaviors.

The scales have been selected from those used previously in research on teacher effectiveness. The majority of the scales were developed in Special Study A during Phase III-A of BTES. Most scales are defined using examples from classroom situations. The rating scale format provides a seven point scale for each of the facets to be rated. Points 2, 4 and 6 are "anchored", in that, key points from the definitions have been "located" at these points.

In every case, raters are to reflect on their classroom experience (for the day in question) and concentrate on the interactions during mathematics and reading instruction among the teaching adults and the target students. It is important that each rating occasion (day) be kept independent of other occasions (days). Therefore, the ratings are to be completed as soon as possible after observation has been completed.

Since teacher behavior could be seriously affected if the teachers knew all of the scales being rated, copies of the scales will not be given or shown to the teachers during the data collection phase of the study. The rating scales are to remain in the field worker's car. They are not to be taken into school buildings. This will ensure that teachers and students will not know what scales are being rated during the data collection phase of the study. If asked by a teacher whether ratings are being made, field workers should respond yes. However, field workers should not discuss the scales or particular ratings with the teachers. The teachers may see their own ratings after the study is over. Field workers should ask concerned teachers to talk about this issue (and any others that field workers have been instructed not to discuss with teachers) with the field coordinators.

Teachers are to be identified by ID numbers only on the rating forms. The forms will be collected along with the observation forms. On days when paired observation is done, both observers will complete the ratings independently.

Summary: Ratings are to be completed for each day of observation. The forms are not to be taken into schools. The forms are to be completed immediately after school in the observer's car. The forms will be collected along with the observation forms.

Scale I: Cooperation. Classroom climates that are high (the "7" end of the scale) on cooperation are characterized by:

students expressing willingness to help other students;
teacher requesting that students help each other;
students attending to what is being taught and appearing to cooperate with the teacher;
students helping others to finish a task, lending materials to each other, etc.

Examples:

1. During a math class, Ricky shouts out loud that he needs an eraser. Dino says, "I got one!" Vicky also offered him her's.
2. Teacher calls on Kelly, "What does it look like?" Kelly cannot answer. Then the teacher asks Kelly to call on someone else to help.
3. Students write stories to each other. Teacher distributes letters among students. Teacher asks, "Does anybody else want to read?" Sharon says, "I do but I can't read it!" Denise offers to read the letter for her, which she begins to do.

Classroom climates low (the "1" end of the scale) on cooperation are characterized by:

students refusing to help other students;
students not being allowed to help each other answer questions;
students being encouraged to compete with each other.

Examples:

1. Teacher says, "Let's see who gets the best marks on this test". "Who will be the smartest in the class?"
2. Student complains, "Teacher, I can't finish my page because Johnny has all of the erasers."

Scale II: Student Responsibility. Classroom climates that are high (the "7" end of the scale) in promoting self-sufficiency are characterized by:

students taking responsibility for their own classwork;
students assuming responsibility for their own belongings;
students being in charge of certain clerical and housekeeping jobs.

Examples:

1. The teacher has a regular schedule of assigning tasks to the students at the beginning of the week.
2. The students work independently and are allowed to check their answers in the teacher's manual.
3. The students are asked to organize their desks and belongings so that they know where things are and do not have to be dependent on other students or the teacher for help in locating things.

Classroom climates which are low (the "1" end of the scale) in promoting self-sufficiency are characterized by:

the teacher taking time to do things which students could better do for themselves;
students not having any responsibilities in regards to housekeeping jobs.

Examples:

1. The teacher goes and gets a pencil (or paper, or book, etc.) for the student.
2. Students are constantly requesting the teacher to do things for them and the teacher complies.
3. Students are not given the opportunity to be monitors or to look after the housekeeping chores of the room.

Scale III: Conviviality. Classroom climates that are high (the "7" end of the scale) in conviviality are characterized by:

good feelings between teacher and student, students and students;
family-like quality to classroom interaction;
friendship encouraged between teacher and students; students and students;
lots of smiling;
tension-free atmosphere;
teacher and students laugh together.

Examples:

1. Teacher is moving about room, stops at Lucy's desk. Lucy looks up, shows her work to teacher. Teacher laughs, Lucy giggles delightedly. Teacher touches Lucy on shoulder, then moves on and Lucy goes on with her desk work.
2. Teacher greets children in a friendly way. She has her arms around two girls.
3. Often the teacher and children will discuss things that have happened to them outside the context of school and instruction. For example, over the week-end, Tony hit a homerun in a baseball game. He spoke about the game to the class and a discussion then evolved with some children mentioning their participation in little league and others stating whether or not they liked to play baseball.
4. Even when teacher corrects students her tone is soft and encouraging.

Classroom climates that are low (the "1" end of the scale) in conviviality are characterized by:

rigidity of classroom interaction;
unfriendly atmosphere within classroom;
laughter at someone else's expense;
joviality on part of teacher, but not returned by students, or visa versa.

Examples:

1. Teacher cannot seem to get the children to cooperate with her. She often addresses students in a loud and unfriendly tone of voice.
2. Two groups of students are often seen taunting each other and causing disturbances within the classroom.
3. Absence of smiles and laughter.

Scale IV: Acceptance of Student Feelings. Classroom climates which are high (the "7" end of the scale) in acceptance are characterized by:

supportive reactions (overt, verbal, non-verbal) to students' feelings and attitudes;
teacher being aware of students' emotional needs and adjusting his/her behavior to accomodate them;
teacher taking time to discuss or explore students' feelings;
teacher's willingness to accept students' feelings without prejudice.

Examples:

1. After Susan wrinkles up her face and says, "Good grief!" she looks frustrated. Mr. Combe says, "Yeah. That's a tough problem."

2. Sometimes Karen goes back and forth to the teacher three or four times in a few minutes. Mrs. James commented on this and said Karen is a student who always has to get things off her chest before she can settle down to work.

3. The teacher talks to the class about how students and adults sometimes worry about whether they will do well on a task. Students also participated in the discussion.

4. The teacher goes over to Steve and says, "You've got a big frown on today. Is something bothering you?" Steve replies, "No." Teacher asks, "Are you sure you don't want to talk about it?" Steve says "no" and the teacher says "okay."

Classroom climates which are low (the "1" end of the scale) on acceptance are characterized by:

criticism to the effect that students "ought to know better;"
teacher ignoring or refusing to talk about feelings.

Examples:

1. Billy has been out of his seat most of the morning. He has worked only from time to time and even then only for a few minutes. His teacher shouts repeatedly, "Billy! Whatever it is, forget it and get to work!"

2. Linda punches George, and George starts crying. Mr. Smith looks at him and says, "Boys don't cry."

Scale V: Cognitive Task Orientation. This scale is a measure of the degree to which the teacher and target students work toward cognitive objectives, stated or implicit, in reading and mathematics activities.

Strong (the "7" end of the scale) task orientation is characterized by emphasis upon student achievement of learning objectives, relevant and purposeful learning activities, and efficient procedures. Students appear to value the cognitive activities and show a willingness to pursue them.

Examples:

1. Classroom has "hum of activity" indicating students are really involved in their work on reading or mathematics.
2. Students spend concentrated periods of time working on cognitive activities.

Classes which are low (the "1" end of the scale) in cognitive task orientation are characterized by very little emphasis on goals or objectives, wandering discussions, disorganized presentation of lesson content, unorganized or overly long procedural activities, and class work which is irrelevent to the cognitive goals. Students do not appear to value work on cognitive activities or appear to do work "because they have to."

Examples:

1. Students and/or teacher often "get off the track"; introduce activities which have very little to do with the cognitive goals.
2. Students appear to work on cognitive tasks only when they have to.

Scale VI: Attention to Students. High (the "7" end of the scale) on attention to students is characterized by:

teacher actively listening to what a student is saying, reading, or reciting;
teacher acknowledging students activity by nodding, by saying "uh-huh", "yes," smiling or giving an appropriate facial expression.

Examples:

1. While Sandy is telling about her new cat, the teacher is nodding and smiling, looking directly at the girl.
2. Teacher interrupts Sam, who has interrupted Tracy, "Let Tracy finish, please." Then, to Tracy she says, "Go on, Tracy." Teacher has walked to Sam and put her hands on his shoulders from behind. She continues to listen intently to what Tracy is saying.
3. Lucy is answering teacher question. Teacher waits while Lucy finishes, then asks, "And how do you feel about that, Lucy?" Teacher looks questioningly at her and leans forward, listening.

Low (the "1" end of the scale) on attention to students is characterized by:

lack of involvement in student responses and comments;
teacher only pretending to pay attention to learning activity.

Examples:

1. Student is reading her social studies report to the class. While this is going on the teacher is looking down at her desk and appears to be correcting papers.
2. Student is describing an incident involving her dog being lost. The teacher is staring at two boys in the back of the room. Teacher tells the boys that they should be doing their reading. Teacher then asks who was it that was telling her story about the dog.
3. Student is reading to the teacher. It is curious that while the pupils are being evaluated, the teacher does not give his/her full attention to the student but simply goes through the motions in a very superficial fashion.

Scale VII: Expectation of Student Success. Teachers who are high (the "7" end of the scale) on expectation of student success indicate in their interactions with students and others that they have confidence in the cognitive ability of their students. These teachers predict that their students will be able to accomplish the academic tasks included in the program.

Examples:

1. The teacher tells the observer that, although these students are the slowest she's ever had, they will do well because they are "good kids."
2. The teacher says to a girl, comforting her, "Cheer up. We all have occasional rainy days. You will learn to do that problem sooner or later."
3. The teacher says, "This is going to be a good day. I know you can all learn to add fractions today."

Teachers who are low (the "1" end of the scale) on this scale have negative expectations about the academic success of their students.

Examples:

1. "Peter, I don't think you will get that Math done."
2. "When will this class ever learn to read correctly?"
3. "I wish it wasn't such a depressing day. Johnny, sometimes I just don't think you will make it in this class."

Scales VIII and IX. Knowledge of Mathematics and Reading. These scales focus on the teacher's knowledge of pedagogy related to mathematics and reading. Teachers who are high (the "7" end of the scale) will be able to explain subject matter concepts in several different ways and be able to relate one concept to another. Teachers with a firm grasp of the subject matter will also be able to provide background information on terms, and ideas relevant to the content area. These teachers will be able to place the sub-areas of the curricula into a larger framework.

Teachers who do not have a firm grasp of the subject matter (the "1" end of the scale) have difficulty in differentiating terms and relationships, lack confidence, give incorrect information, are unable to give background information on curricular matters, and are unable to explain issues from more than one point of view.

Scale X: Clarity. Clarity refers to the degree to which the students understand the teacher's presentation of material and directions. Teachers who are high (the "7" end) on this scale provide explanations and directions which are easy to understand and pupils' questions are adequately answered. The teacher seems aware of the pupils' levels of understanding.

Low (the "1" end of the scale) clarity, means that the teacher is "over their heads" and is confusing to the pupils. If the teacher has low clarity, the students seem very confused by the presentation or directions. The teacher cannot answer the pupils' questions, or answers them in an unclear manner by using concepts and terms the pupils are apparently unfamiliar with or by being overly complex and ambiguous.

Scale XI: Abruptness. Teachers who are high (the "7" end of the scale) on the abruptness scale are characterized by:

rapid changes from one learning activity or lesson to another without advising students;
unanticipated changes without "wrapping up" what was in progress;
teacher's change in behavior often resulting in pupil surprise or confusion.

Examples:

1. Teacher, "Okay, get out your readers and turn to page 195."
   Students, "But we haven't finished our math worksheet."
   Teacher, "Sorry, maybe you can find time to do it later."

2. Students have been working diligently, but noisily. After several warnings, teacher says, "Alright. Put your books away. Since you already know the materials, it's quiz time."

Teachers who are low (the "1" end of the scale) on abruptness:

make smooth transitions between work periods;
"ease in" from activity to the next.

Examples:

1. Teacher makes sure that students are aware that one activity is coming to an end and that another is beginning.

2. Teacher manages transitions smoothly, keeping "lost time" and disruptions to a minimum.

Scale XII: Flexibility. This scale reflects the degree of reactivity of the instructional program to changes in classroom and school conditions. Teachers who are high (the "7" end of the scale) on spontaneity are able to sense when an activity needs to be changed during implementation. Sometimes a particular activity needs more time than was planned. Teachers who are high on spontaneity are able to adjust the daily program to fit the interruptions, student moods, weather, etc.

Examples:

1. A planned activity can't continue because students are unfamiliar with a prerequisite concept or skill. The teacher immediately changes her expectations about the day's lesson and either spends time on the prerequisite skill or moves to another activity.
2. A lesson is particularly successful and has generated high student involvement. The teacher extends the planned time so that the activity may be completed.

Teachers who are low (the "1" end of the scale) on spontaneity do not accomplish program changes to fit classroom conditions. Lessons tend to be implemented according to the plan even if the plan is clearly not working very well.

Examples:

1. Students clearly are missing a prerequisite skill but the teacher goes on with the planned lesson anyway.
2. Teacher sticks rigidly to predetermined time schedules.

Scale XIII: Complexity of Communication. This scale measures the degree of complexity in the verbal interactions between the teacher and his students. If the interactions require mental processes beyond storage and recall of knowledge, then the communication is relatively complex. The high end of the scale (the "7" end) is represented by communication which involves many higher order questions. Answering a higher order question usually involves reasoning. Combining facts into principles, comparing or contrasting, interpreting, evaluating, etc., are typical higher order processes.

Example:

1. "Why wouldn't all the birds in the foothills constitute a population?"

The low end of the scale (the "1" end) is represented by communication which requires students to recall facts. This level of complexity involves very little reasoning and is usually characterized by a perponderance of lower order questions. Lower order questions are questions which ask the students to recall information which they have read or remember from their own general knowledge.

Example:

1. "Who remembers the definition of a population?"

Scale XIV: Consistency of Message. Teachers who are high (the "7" end of the scale) on this scale set up contingencies with individuals or groups of students and follow up on the contingencies. The situation may be either a punishment or reward situation and may relate to either control of classroom behavior or to academic tasks. Teacher who are high on this scale maintain consistency between verbal statements and subsequent actions.

Examples:

1. "If you don't quiet down you'll stay in for recess." Class had to stay in because they did not quiet down.
2. "If you finish your math, you may work on your independent projects." Only students finishing their math were allowed to work on their independent projects.
3. "You can't go home until you clean up the room." Teacher made sure the room was clean before dismissing the students.

Teachers who are low (the "1" end of the scale) in consistency of message often set up contingencies but frequently either forget to carry through or change the punishment or reward for no obvious reason.

Examples:

1. Teacher threatens student by saying she will take away points if she does not sit down. Student continues to stand; teacher ignores action.
2. Teacher promises first choice of new library books to those who complete math assignments correctly. However, books are taken on a first come, first served basis.
3. Names of students who are to stay after school are placed on the blackboard. Teacher does not keep these students after school.

Scale XV: Structuring. Structuring refers to the degree to which the organization of the content to be taught, and the way in which the content will be taught are made explicit. Teachers who are high (the "7" end of the scale) on structuring are characterized by the following behaviors:

1. Outlining the lesson content. As part of the introduction to a lesson, the teacher can provide advance organizers by outlining orally (and/or on the chalkboard) the major concepts, topics, their interrelations, and the sequence in which they will be addressed during that day's lesson.

2. Stating learning objectives. As part of the introduction to a lesson, the teacher can specify the major learning goals for the day's lesson. Objectives can include both what the students are expected to learn, how the session will be taught and what the students will be doing.

3. Signaling transitions. The purpose of signaling transitions is to make it clear to the students that one part of the lesson is finished and that the class is moving on to the next. This can apply to both changes in the subject matter and changes in the way the content is being taught.

4. Indicating important points. Students are helped to recognize which parts of a lesson are most important by statements like "This is a very important point," "I want you to remember this," etc. Emphasis of importance can also be conveyed by tone of voice.

5. Reviewing. Reviewing occurs at several points in a lesson. At the beginning of a session, the teacher reviews the main ideas and facts covered in the previous day's lesson. As the lesson proceeds on to the end of a teaching session, the teacher gives a brief summary or recapitulation of the material covered that same day.

Examples:

1. "Here is an outline of what we'll be talking about today":

    I. Number Line

        A. Definition

            1. Counting numbers
            2. Zero
            3. Sets

2. "In today's lesson I want you to learn the definition of a pronoun. Also, I want you to be able to give examples of how pronouns are used".

    "This morning we are going to work on using context to define words. First, we will talk about some examples, then you will do an exercise on your own. You will be learning how to use the meaning of a sentence to figure out the meaning of a new word."

Scale XV (Cont'd)

3. "We've finished reviewing yesterday's lesson. Now let's begin the lesson for today."

4. "So the important thing to remember is that the pronoun gets it's meaning from the noun it refers to."

5. "Let's summarize the two kinds of pronouns that we've been talking about today: personal and demonstrative."

   At the beginning of the reading group session, the teacher says, "Who remembers what we were reading about yesterday".

Teachers who are low (the "1" end of the scale) on structuring do not include the above behaviors in their daily teaching of reading and mathematics. Low structuring is characterized by the absence of outlining lesson content, stating learning objectives, signaling transitions, indicating important points, reviewing and summarizing.

Examples:

1. "Okay. Get out your readers. Turn to page 76. Tommy, you read first, please."

2. At the beginning of a reading group's session with her, the teacher passes out worksheets and says, "I want you to fill out the ditto sheets for yesterday's story. Circle the answer for each question. Work silently, please."

3. Students have been discussing the ideas in a story they read. To close the session, the teacher says, "That's all for today. Now go to your seats and do your math assignment."

Supplementary Notes on Rating Scales (Oct. 4)

1. If there are two separate teachers (one for reading and another for mathematics) complete two rating forms (one for each teacher) per day.
2. If there is a split class (target students are split; some in one class some in another) for any part of reading and/or mathematics then complete rating forms for the supervising adult in each of the classes. This applies to pull-out programs as well as to "split" classes.
3. If there is more than one adult in the same "classroom" then complete one rating form and "weight" it more heavily for the adult-in-charge.
4. Concentrate the ratings in the reading and mathematics instruction which occurs during the day of observation.
5. If you have observed no behavior on a particular day upon which to base a particular rating, then write in NO immediately to the left of the scale. Use this option sparingly. These scales (as opposed to the observation procedure) are intended to require relatively high inferences.
6. If there is a substitute teaching the class when you observe, complete the rating form for the substitute. (Observation will not be scheduled on days when substitute teachers are teaching whenever possible).
7. Whenever two (or more) rating forms are completed for the same observation occasion (points 1 and 2 above) or when a substitute is present (point 6 above), make a special note on the cover of the rating form. If the situation called for more than one rating, use the same teacher identification number but identify the forms as teacher, reading lab, teacher, team teacher #2, or other appropriate message. If a substitute has been rated, note on the cover "substitute", while using the regular teacher identification number.

Appendix E

Interview and Questionnaire Manual

INTERVIEW AND QUESTIONNAIRE MANUAL

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I. Introduction: A Review of the Development of the BTES Interview Guides.

The development of interview guides and procedures for the Beginning Teacher Evaluation Study (BTES) at the Far West Laboratory was conducted by Nomos Institute during July of 1976. It revolved around a two-cycle pilot test of four interview guides. This pilot test was designed (1) to provide an early forecast of the responses that these interview guides are likely to elicit; (2) to permit accurate estimation of the time required to complete the interviews; and (3) to note any procedural problems that may arise in connection with the interviews.

The first cycle of interviews was conducted by two interviewers, one from Nomos Institute and one from the Far West Laboratory. Each of the four interview guides was piloted on 10 teachers, making a total of 40 interviews that were completed in the first-cycle pilot test. The results of the first-cycle pilot test were presented and analyzed in an Interim Report in mid-July. This Interim Report included several suggestions for modification of the interview guides. On the basis of these suggestions and other considerations, the BTES staff made minor changes in Interview Guides I and II and substantial changes in Interview Guides III and IV. The finalized versions of the interview guides are presented in this manual.

For the second interview cycle, only Interview Guide III was re-piloted (again on a total of 10 teachers). The minuscule changes effected in Interview Guides I and II made further pilot-testing unnecessary. Although Interview Guide IV underwent more profound change between the first and second cycles, its final form relies upon teacher activity logs that were not available during the summer (thereby precluding pilot testing). Hence, only Interview Guide III was used in the second cycle pilot test. Again, these interviews were evenly divided between an interviewer from Nomos Institute and one from the Far West Laboratory. Since the Far West Laboratory switched its interviewers between the first and second cycles, the new interviewer conducted additional "practice" interviews using Interview Guides I and II to gain experience prior to the inauguration of BTES's actual interview schedule during the 1976-77 school year.

The interviewers attempted, to the maximum extent possible, to duplicate the interview conditions anticipated for the actual BTES classroom interviews. Since the pilot tests took place during summer vacation, however, this required that teachers respond to interview questions out of an imaginary time context. Teachers were asked to respond as they would have if questions had been posed during the last school year; teachers were to suppose that Interview Guide I was administered last September; Interview Guide II last October; Interview Guide III, last November or December; and Interview Guide IV, last April. Since this required that teachers recall individual pupils' special needs and situations at specific points in time during the past school year, responses reflected a blend of recollection and guesswork by teachers. Although many teachers encountered difficulty with the pilot test's "imaginary time context," most teachers agreed that their responses were at least "typical" (if not exactly correct for each individual pupil). A content analysis of teacher responses to the pilot-test interviews (both Cycles I and II) is presented in Section IV of this manual.

II. General Guidelines for Interviewing.

Perhaps the most important guideline for interviewing teachers is that the interviewer should *never appear to question the appropriateness* of any procedures or ideas presented by the teacher. It should be clear to the teacher that the interviewer is in no way evaluating him/her.

The interviewing procedures described in this manual consist, primarily of three types of questions: *initial questions*, *follow-up questions*, and *clarification questions*. Both initial and follow-up questions are specified in this manual. It is not necessary that interviewers use the exact wording provided here. However, there should be no substantial deviation from this wording and it would be appropriate to use this wording verbatim. Therefore, the only decision necessary for the use of initial and follow-up questions is to determine whether or not a given follow-up question is needed (the initial question is always used, of course). The initial question is stated rather broadly, allowing the teacher to provide any of a wide range of responses. *It is important that the teacher responds to the broadly-stated initial question before the more specific follow-up questions are asked*. The purpose of the follow-up questions specified in this manual is to insure that certain specific pieces of information are obtained during the interview, *without prematurely focusing the teacher* on those areas. One purpose of the interview is to determine what areas of interest are focused upon by the teacher in response to the broadly-stated initial question. *After* this is accomplished, the interviewer must insure that the particular pieces of information specified in the follow-up questions are also obtained, *if they have not already been included in the teacher's response to the initial question*. In many cases the teacher will provide enough information initially that no follow-up questions are necessary.

Clarification questions are not specified in this manual. They are to be used at the discretion of the interviewer. The purpose of clarification questions is simply to clarify a response provided by the teacher, as by requesting elaboration of a term (such as "individualization). The usual form of a clarification question is, "What do you mean by....?" The considerations discussed previously are important here. First clarification questions should be phrased carefully so that it is clear the interviewer is simply trying to obtain complete and accurate information, rather than to question the appropriateness of anything the teacher has said. Second, clarification questions should not focus the teacher on any area beyond that of the teacher's own response. That is, the interviewer must take care not to suggest additional areas of response to the teacher. Additional response areas should only be suggested using the specific follow-up questions as described above. This procedure will insure that all information provided by the teacher, other than that pertaining to the follow-up questions, is information focused upon by the teacher, not by the interviewer. Therefore, teachers can be distinguished not only in terms of their particular responses, but also in terms of the general areas or categories upon which their responses focus. For example, one teacher may provide information on the affective disposition of students, whereas another may focus on student cognitive skills. In addition, one teacher might focus on commonalities among students, whereas another may consider only differences. It is critical that the interviewer obtain all the elaboration necessary to fully understand what the teacher is saying, without biasing the teacher to say something that he/she might not otherwise have considered.

Teacher responses will be recorded by the interviewer in the form of written notes. These notes should be written on a "Notes Page" under the question to which the teacher is responding. (Samples of "Note Pages" are included in this manual). This procedure should be followed even when the teacher's response is more relevant to a question that has been or will be asked in another interview. Content analysis of responses should be sufficient to determine the areas of relevance of a given response. It is important, however, to record each response so that the particular question that elicited the response can be determined. The same response may have a somewhat different meaning depending upon the question to which it is directed.

It is essential that interviewers take the most complete and detailed interview notes possible. Completed interview guides will be content analyzed (a social science technique for distilling and quantifying descriptive and interview data). If the raw data (the completed interview guides) are already extremely terse or vague, little remains for the content analyst to distill. Interview guides should be detailed, using the teacher's own phrasing as much as possible. It is better to err on the side of repetition than on the side of vagueness.

Styles of notetaking vary widely and are largely idiosyncratic and personal. Interviewers should record interview notes in a style that is comfortable for them. However, a few tips might be helpful:

-- Elegant sentence construction is unnecessary. In fact, interviewers need not even write complete sentences. In some cases, mere listing of phrases and clauses will suffice. Notetaking is facilitated by elimination of superflous words (e.g., articles, pronouns).

-- Interview notes are often easier to read if each main idea or point is noted by some kind of regular symbol (e.g., a dash --, an arrow ⟶, an asterisk *).

-- Abbreviate words where possible, making sure that the abbreviations will be self-explanatory. Here are some common abbreviation forms:

(1) Eliminate vowels (e.g., tchr = teacher; trng = training; rdng = reading, etc.).

(2) Shorten words (e.g., behav = behavior; disc = discipline; curric = curriculum; rdng comp = reading comprehension; math comp = math comprehension).

(3) Reduce words to letters (e.g., g. l. = grade level).

Interview Guides I and II will be completed using both written notes and audio-tapes. In using these two guides, field workers will simultaneously tape interviews and take written notes. This procedure will permit field workers to correct their written reports (through reference to the tapes) well after the interviews are finished.

III. Guides for Interviews I, II, III, and IV and the Questionnaire.

The following pages provide the guides to be used with each of the four interviews, as well as the questionnaire that will be obtained at the time of Interview. An "Outline" is provided for each interview guide. This may be used as a quick reference for the questions (both initial and follow-up) included in each interview, as well as the interview's duration and month of administration. In addition, "General Information" is provided for each interview, as an elaboration of the questions and procedures. Also included are samples of the various materials to be used in each interview ("Notes Pages" for Interviews I, II, and III: the Questionnaire for Interview I; and the example test items for Interview II). It should be pointed out that these are the only materials that are to be used during the interview. The Outline and General Information pages should be kept out of the teacher's view. The interviewer may, therefore, wish to review the outline briefly before each interview to insure that no procedures are omitted.

OUTLINE

TEACHER INTERVIEW

GUIDE I/SEPTEMBER

(audio-taped)

(40 minutes)

INITIAL INTERVIEW

1. Review of Questionnaire

    a. Questionnaire should have been distributed during the initial conference and completed by the teacher prior to the initial interview.

    b. Respond to teacher questions about the questionnaire.

2. Interview Question: (Record responses on interviewer note pages).

    "How will the curricular materials and the sequence of instruction be assigned to students?" (Follow-up questions: Is the class divided into groups? What specific curricula are used in each group? What year or edition of each curriculum is used? Does the sequence or pacing of curricula differ for the groups? How are students assigned to groups? How are students assigned to classes in the school?)

    a. "For mathematics"

    b. "For reading"

General Information on Interview Guide I: Initial Interview

1. Review of Questionnaire

The questionnaire should have been handed out to each teacher during the initial conference. At that time, the field worker should have explained questionnaire items as necessary and should have requested that the questionnaire be completed prior to the initial interview. Therefore, teachers should have already completed the questionnaire. Hence, the present step will only involve review of the questionnaire. Ask the teacher for the completed questionnaire and check it for completeness and legibility. Read each question to insure that responses are clear and logical. Ask teachers whether any items were confusing and resolve any remaining questions pertaining to the questionnaire.

The interviewer may have already determined whether other teachers are involved in the reading and mathematics instruction for this teacher's students, according to information obtained during the initial conference. However, this determination should be validated against the questionnaire responses and any elaboration provided by the teacher during the review of the questionnaire. In addition, it will be necessary to determine, after the initial interview, whether the reading and mathematics instruction provided by other teachers pertains to any of the identified students in the class (the identified students will not have been selected at the time of the initial interview). If any of the identified students receive reading or mathematics instruction from other teachers, then these teachers must also be interviewed.

2. Interview Question: "How will the curriculum materials and the sequence of materials be assigned to pupils (A) "For mathematics," and (B) "For reading."

This question is concerned with the teacher's overall strategy for the instruction and management of the class. Although future interview guides examine instruction for individual pupils, this interview guide seeks background on the teacher's approach to the whole class. We are looking for reasonably complete information on the structure of instruction. Therefore, more follow-up questions are to be used with this interview than with subsequent interviews that are less directive. The follow-up questions are: "Is the class divided into groups?" "What specific curricula are used in each group?" "What year or edition of each curriculum is used?" "Does the sequence or pacing of curricula differ for the groups?" "How are students assigned to groups?" and "How are students assigned to classes in the school?" It should be noted that any tests used are considered part of the curriculum. Therefore, the names and dates or editions of published tests used by the teacher should be obtained.

As discussed under the General Guidelines for Interviewing, no follow-up questions other than those specified should be used during the Initial Interview. In addition, these follow-up questions should be used only after the teacher has responded to the initial question and has not provided the information requested in the follow-up question. The interviewer may, however, ask other clarification questions as necessary to insure that the teacher's responses are fully understood (see General Guidelines for Interviewing).

This interview is to be audio-recorded.

E-12

Name____________________

School____________________

Grade____________________

Date____________________

CLASSROOM BACKGROUND QUESTIONNAIRE

Please fill out this questionnaire and return it to your interviewer at your next meeting.

1. Generally, would you say you teach

   as part of a team (other teachers conduct some of the instruction of your "homeroom" students) __________

   pretty much independently __________

   combination of above (specify)____________________

   ____

2. If you're part of a team, who are the other team members and what instruction do they provide to your "homeroom" students? (We may need to get other information from them).

Teacher	Type of instruction provided to your "homeroom" students

3. What percent of your instructional time in reading do you generally spend in:

   individualized instruction __________

   small group instruction __________

   whole class instruction __________

   other (please specify) ____________________

   ____

   (NOTE: Please be sure your entries sum to 100%.)

4. What percent of your instructional time in mathematics do you generally spend in:

individualized instruction ____________

small group instruction ____________

whole class instruction ____________

other (please specify) ____________________

____

(NOTE: Please be sure your entries sum to 100%.)

5. Do any of your children see a specialist outside your classroom? ______

What kind?

Reading ______

Math ______

Learning Disability ______

Speech ______

Other (please specify) ____________

____

6. If you conduct a reading program, check any of the following who assist you regularly in that program.

reading specialist ______

teacher aide ______

adult volunteer ______

student tutor ______

other (please specify) ______________________

____

7. If you conduct a reading program, check the activities usually performed by those who assist you regularly in that program.

ACTIVITY	PERSONNEL				
	Reading Specialist	Teacher Aide	Adult Volunteer	Student Tutor	Other (Please specify)
Clerical work					
Supervising independent activities					
Tutoring					
Instructing groups					
Other (please specify)					

8. If you conduct a mathematics program, check any of the following who assist you regularly in that program.

math specialist ________

teacher aide ________

adult volunteer ________

student tutor ________

other (please specify) ____________________

____

9. If you conduct a mathematics program, check the activities usually performed by those who assist you regularly in that program.

ACTIVITY	PERSONNEL				
	Mathematics Specialist	Teacher Aide	Adult Volunteer	Student Tutor	Other (Please specify)
Clerical work					
Supervising independent activities					
Tutoring					
Instructing groups					
Other (please specify)					

10. What is your daily class schedule? Please include lunch and recess times. (Use the back of this page, if necessary.)

NOTES PAGE

Guide I

Initial Interview

September

(40 minutes)

TEACHER____________________

GRADE____________________

SCHOOL____________________

DATE____________________

INTERVIEWER____________________

"How will the curricular materials and the sequence of instruction be assigned to pupils?"

A. "For mathematics"

Page 2

NOTES PAGE

Guide I

TEACHER__________________________

DATE_____________________________

B. "For reading"

OUTLINE

TEACHER INTERVIEW
GUIDE II/OCTOBER

(60 minutes)
(audio-taped)

PLANNING INTERVIEW

1. "Describe the major problems and strengths of this student in mathematics."

2. "What are your instructional plans for this student in mathematics?" (Follow-up questions: What mathematics group will he/she be in? Does he/she see any specialist or go to a lab for mathematics?)

3. "Describe the major problems and strengths of this student in reading."

4. "What are your instructional plans for this student in reading?" (Follow-up questions: What reading group will he/she be in? Does he/she see any specialist or go to a lab for reading?)

5. "If this student were administered the following test questions today, which ones do you think he/she would answer correctly. (Show the teacher example test items. Interviewers should record only the numbers of questions that teachers guess students would answer correctly.)

General Information on Interview Guide II: Planning Interview

This interview is designed to elicit the teacher's plans and strategy for each identified student. It is intended to focus on assessment, instructional planning, and their interrelationship.

The five questions included in this interview must be asked with respect to each of the identified students separately. Therefore, the teacher should be forwarned that this is a relatively lengthy interview (estimated duration of 60 minutes). Hopefully, this will reduce the tendency for responses earlier in the interview to be more lengthy than those later in the interview. As an additional precaution against the effects of progressively briefer responses, always have the teacher respond to the four questions for each of the identified students in alphabetical order, by last name. This should remove any systematic bias that might occur if the teachers were allowed to discuss the students in the order that they prefer.

It should be noted that two of the initial questions have no follow-up questions:

1. "Describe the major problems and strengths of this student in mathematics."
3. "Describe the major problems and strengths of this student in reading."

The crucial information obtained with these questions pertains to the areas of concern that are most strongly emphasized by the teacher in describing each student. Therefore, follow-up questions are not used so that the teacher will respond freely and without specific direction from the interviewer. Clarification questions may still be necessary to insure that all responses are fully understood. However, it is important that the interviewer only seek clarification. Probing for elaboration of general statements or for consideration of additional areas must be excluded from the administration of these questions.

Initial questions two and four do include follow-up questions:

2. "What are your instructional plans for this student in mathematics?"

4. "What are your instructional plans for this student in reading?"

The follow-up questions are: "What mathematics/reading group will he/she be in?" and "Does he/she see any specialist or go to a lab for mathematics/reading?" These follow-up questions are included because we are particularly concerned with grouping practices and with certain kinds of instruction that the student may receive outside of the regular classroom. Therefore, we need to obtain this information even when it is not among the primary concerns of the teacher. However, we do not want to direct the teacher to these more specific concerns until after the teacher has responded freely to the more general question.

Question number five, pertaining to example test items, should be administered in a routine fashion as described on the outline page for this interview. If the teacher questions the purpose of this exercise, simply explain that we thought it might be an interesting technique for getting teacher judgements on students in terms of a standard referent. We have not tried this before and we are not sure how it will work out.

This interview is to be audio-recorded.

NOTES PAGE	NAME______________________________
	GRADE______________________________
Guide II	SCHOOL______________________________
Planning Interview	DATE______________________________
October	INTERVIEWER__________________________
(60 minutes)	IDENTIFIED STUDENT____________________

---

1. "Describe the major problems and strengths of this student in mathematics."

NOTES PAGE

Page 2

Guides II

TEACHER________________________

DATE________________________

IDENTIFIED STUDENT______________

2. "What are your instructional plans for this student in mathematics?"

NOTES PAGE

Page 3

Guide II

TEACHER________________________________

DATE________________________________

IDENTIFIED STUDENT____________________

3. "Describe the major problems and strengths of this student in reading."

NOTES PAGE

Page 4

Guide II

TEACHER________________________

DATE________________________

IDENTIFIED STUDENT________________________

4. "What are your instructional plans for this student in reading?"

NOTES PAGE

Page 5

Guide II

TEACHER________________________

DATE________________________

IDENTIFIED STUDENT________________

5. "If this student were administered the following test questions today, which ones do you think she/he would answer correctly?"

(Record only the number for each question that the student would answer correctly, as judged by the teacher.)

ITEMS FOR PLANNING INTERVIEW - SECOND GRADE MATHEMATICS

Draw a ring around your answer.

I.

$$\begin{array}{r} 36 \\ +\ 42 \\ \hline \end{array}$$

64 78 88 74

Draw a ring around your answer.

II.

$$\begin{array}{r} 18 \\ -\ 4 \\ \hline \end{array}$$

13 14 22 15

III. Draw a ring around the largest number.

108 180 118 128

IV. Another way to write 59 is:

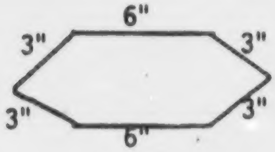
5 + 9 90 + 5 9 + 5 50 + 9

ITEMS FOR PLANNING INTERVIEW - FIFTH GRADE MATHEMATICS

I. 84
X 40

II. 96
X 52

III. What is the perimeter of this polygon?



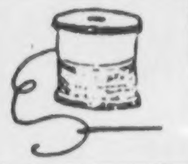
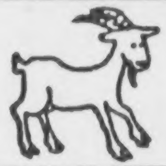
18 inches   24 inches   21 inches   45 inches

IV. In 409,582 the 9 means:

9   9 X 100   9 X 1,000   9 X 10,000

ITEMS FOR PLANNING INTERVIEW - SECOND GRADE READING

I. Circle the word that names the picture.

	tread thread tead		goot got goat

II. Look for the root word in the longer word. Draw a line through the word to show the two parts.

waiting

III. Find the best definition for the underlined word. Circle your answer.

speak to him

listen
run
talk
wave

IV. Find the word or phrase that means the same thing as the underlined word. Circle your answer.

Bob and Sue got some library books.

They read for a long time.

Bob
Bob and Sue
Sue
books

ITEMS FOR PLANNING INTERVIEW - FIFTH GRADE READING

I. Choose the word with the best meaning for the underlined word. Circle the letter of the answer you choose.

various types

A. different
B. distinguished
C. valuable
D. vital

II. Read the underlined word and look at the three groups of letters to the right. One group of letters is the first syllable of the underlined word. Circle the correct group of letters.

respect re res resp

III. Read the story and think about the meaning of the underlined pronoun. Circle the letter of the answer that tells what the pronoun means.

> Mother and I looked at my clothes. She said, "You need some new shirts, Pearl. We will buy them on Saturday."

You means

A. clothes
B. shirts
C. Mother
D. Pearl

IV. Each of these questions has a group of sentences about one subject. Pick out the topic sentence for each group. Circle the letter of the answer you choose.

4. Which sentence states the topic?

A. There are many examples of air pressure.
B. Air pressure helps paper airplanes to fly.
C. Drinking through a straw is one example of air pressure.
D. You can blow up a balloon and show air pressure.

OUTLINE

TEACHER INTERVIEW
GUIDE III

(20 minutes)

WEEKLY INTERVIEW

1. "Have there been any changes in any of the identified students, or in the instructional program for any of them during the past week?

   (Follow up question: Has there been any change in grouping?)

   a. "In mathematics?"

   b. "In reading?"

General Information on Interview Guide III: Weekly Interview

This interview will take place once per week with each teacher, following the day of classroom observation by Far West Laboratory personnel. It is designed to monitor any changes in the situation of identified students. The first half of the question is concerned with changes in the students themselves (problems, strengths, performance, attitude, or whatever else is of interest to the teacher). The second half of the question pertains to changes in the instructional program for students. This might involve changes in curricular materials, sequencing of materials, method of presentation of materials, or other factors noted by the teacher. The interviewer should state the question using intonation that stresses each half separately.

The only follow-up question pertains to changes in grouping. We want to be certain that any changes in grouping are identified on a weekly basis. No other follow-up questions will be used during the weekly interview. The major concern here is to determine what student-related variables are salient to the teacher on a week-to-week basis. Therefore, it is important that the interviewers not probe, redirect, or lead the teacher. Clarification should be sought where this is necessary. However, clarification questions should be phrased carefully so that they do not lead the teacher to provide a more elaborate response involving additional considerations.

It should be noted that the interviewer may need to seek clarification as to whether a particular instructional change pertains only to the identified student(s) under discussion or to the entire group to which they belong. For example, if a teacher talks as though a change in reading curriculum was made for just one identified student, this would imply that the student is now getting different instruction than the other students in his/her reading group. Given our concern for grouping changes (see the follow-up question for this interview), it is important to determine whether this is really a change for just this individual student or for his/her entire reading group.

This interview should be conducted in a relatively casual fashion. The same question is to be repeated every week. In many cases, a teacher may simply indicate that no changes have occurred. As a means of insuring that this question is treated casually by the teacher, do not audio-tape during the Weekly Interview. The notes taken during this interview will be sufficient for data collection purposes.

NOTES PAGE	TEACHER________________
	GRADE________________
GUIDE III	SCHOOL________________
WEEKLY INTERVIEW	DATE________________
(20 minutes)	INTERVIEWER________________

"Have there been any changes in any of the identified students, or in the instructional program for any of them during the past week?"

a. "In mathematics?"

NOTES PAGE

Page 2

Guide III

TEACHER________________________

DATE________________________

b. "In reading?"

OUTLINE

TEACHER INTERVIEW
GUIDE IV/JAN-FEB, &
APRIL

(30 minutes)

FOLLOW-UP INTERVIEW

1. Interviewers and other Far West Laboratory staff should review the identified student's activity logs and interviews for the previous semester to identify any items that require clarification. Questions should then be formulated. Interviewers should note the questions posed and the teacher's responses.

   At the April follow-up interview only, the interviewer should also ask how keeping the activity logs influenced the teacher's thinking about instruction, if at all.

2. At the April follow-up interview only, the interviewer should ask, "If this student were administered the following test questions today, which ones do you think the student would answer correctly?" (Show the teacher example test items. Interviewers should record only the numbers of questions that teachers think students would answer correctly.)

General Information on Interview Guide IV: Follow-up Interview

The purpose of this interview is to retrospectively examine any aspects of the previously obtained logs or interviews that are unclear or incomplete. This will provide an opportunity for reviewing the information collected from teachers, identifying areas where further elaboration is warranted, and obtaining this additional information during the course of the study. By the time that the data analysis is fully under way, it will be too late to obtain further information from the participating teachers, in that the routine contact of the data collection phase of the study will have been terminated. Therefore, it is important to establish times during the data collection phase of the study when information obtained from teachers will be reviewed and any necessary clarification will be obtained.

The example test item questions are administered at the April interview only, using the same procedure followed in the Planning Interview.

Also at the April Follow-up Interview, the teacher will be asked how, if at all, the keeping of activity logs influenced his/her thinking about instruction. This question is asked at the end of the study, when the teacher should be best able to answer it and when the consideration of this issue cannot influence any subsequent data collection.

IV. Content Analysis of Responses to Pilot Test of Interview Guides.

Content analysis, as described in the preceding section, was performed on the interview data collected for the BTES Interview Guide Pilot Test. The results are reported here by interview cycle, grade, interviewer, and teacher.

Teachers were assigned code letters from A to Q. The number of comments made by each teacher was then noted (e.g., K-2 equals Teacher K made two of these comments) in the cells corresponding to the appropriate response category, cycle, grade and interviewer (where X = Nomos Interviewer and Y = Far West Laboratory Interviewer). Within each cycle, totals are given for each grade and for both grades combined. Across both interview cycles, totals are given for each interviewer and for both interviewers combined (except for Interview Guides III and IV where the interview questions substantially changed between Cycle I and Cycle II).

INTERVIEW GUIDE I:

1. "How will the curriculum materials and the sequence of instruction be assigned to pupils in Math?"

	CYCLE I							CYCLE II							Cycle I and II		
	Grade 2 (n=3)			Grade 5 (n=3)			Cycle I	Grade 2 (n=1)			Grade 5 (n=1)			Cycle II			
Response Category	X	Y	Total	X	Y	Total	Total	X	Y	Total	X	Y	Total	Total	Total X	Total Y	Total
1. Comments on Diagnostic Procedures	0	2	2	0	5	5	7	0	1	1	0	3	3	4	0	7	7
a. Use distinct tests		B-1	1		D-1 L-1	2	3		H-1	1		K-1	1	2	0	3	5
b. Use Stanford Achievement					L-1	1	1			0			0		0	1	1
c. Use Criterion-referenced test		B-1	1			0	1			0		K-1	1	1	0	2	2
d. Use teacher made tests					D-1	1	1			0		K-1	1	1	0	2	2
e. Diagnosis based on pupil work					L-1	1	1								0	1	1
2. Comments on Curriculum Used	2	1	3	0	3	3	6	0	0	0	0	1	1	1	2	5	7
a. Use McCormick					L-1	1	1			0			0		1	0	1
b. Use Manipulatives	P-1		1			0	1			0			0		1	0	1
c. Use Worksheets, textbooks	P-1	E-1	2		N-1 L-1	2	4			0		K-1	1	1	1	4	5
3. Comments on Content of Course	1	1	2	0	3	3	5	0	0	0	0	1	1	1	1	4	5
a. Operations with whole numbers	P-1	B-1	2			0	2			0			0	0	1	1	2
b. Operations with fractions					D-1	1	1			0		K-1	1	1	0	2	2
c. Metric Measures					D-1	1	1			0			0	0	0	1	1
d. Word problems					L-1	1	1			0			0	0	0	1	1
4. Comments on Course Organization	3	1	4			0	4		1	1			0	0	3	2	5
a. Pupils assigned to groups	P-1		1			0	1		H-1	1		K-1	1	2	1	2	3
b. Provide individual help	P-1	E-1	2			0	2			0			0		1	1	2
c. Groups use same curriculum at different pace	P-1		1			0	1		H-1	1			0	1	1	1	[illegible]

INTERVIEW GUIDE I:
I. "How will the curriculum materials and the sequence of instruction be assigned to pupils in reading?"

Response Category	CYCLE I Grade 2 (n=4) X	Y	Total	Grade 5 (n=2) X	W	Total	Cycle I Total	CYCLE II Grade 2 (n=2) X	W	Total	Grade 5 (n=2) X	Y	Total	Cycle II Total	Cycle I and II X Total	Y Total	Total
1. [illegible] on diagnostic procedures	6	8	14	0	2	2	16	0	5	5	0	2	2	7	5	17	23
a. Use reading series' norm-ref tests	D-1	B-1	3			0	3		H-1	1			0	1	2	2	4
b. Use district-made norm-ref tests	D-1	E-1	2			0	2		H-1	1		D-1 K-1	2	3	1	4	5
c. Use SPACHE diagnostic	D-1	E-1	3			0	3		I-1	1			0	1	1	3	4
d. Use [illegible]		I-1	1			0	1		I-1	1			0	1	0	2	2
e. Use [illegible]			0		L-1	1	1			0			0	0	0	1	1
f. [illegible]		E-1	1			0	1			[illegible]			0	0	0	1	1
g. [illegible] test			0		C-1	1	1			0			0	0	0	1	1
h. Review cum folder	D-1	I-1	2			0	2		I-1	1		K-1	1	2	1	3	4
i. Use publishers teachers guides	D-1	B-1	2			0	2			0		D-1	1	1	1	2	3
2. Comments on class organization & activities	1	1	2	0	10	10	12	0	0	0	0	7	7	15	1	26	27
a. Use individualized reading			0		N-1	1	1		H-1	1			0	1	0	2	2
b. Use contracts			0		C-1	1	1			0		K-1	1	1	0	2	2
c. Focus on reading [illegible]			0		N-1 O-1	2	2			0		K-1	1	1	0	2	2
d. Do oral reading/class discussion			0		L-1	1	1		H-1	1		K-1	1	2	0	3	3
e. Work in basal readers/texts.			0		N-1 O-1	2	2		H-1 I-1	2		D-1	1	3	0	5	5
f. Work in comprehension/problem solving			0		O-1	1	1		H-1	1		K-1	1	2	0	3	3
g. Use large reading groups			0		L-1	1	1		[illegible]	2		K-1	1	3	0	4	4
h. Use small groups	D-1	E-1	2		M-1	1	2		I-1	1		O-1	1	2	1	4	5
3. [illegible] kind of curriculum used	[illegible]	[illegible]	8	0	2	2	10	0	0	0	0	0	0	0	5	5	10
a. [illegible]		[illegible]	1			0	1			0			0	0	0	1	1
b. [illegible]		E-1	1			0	1			0			0	0	0	1	1
c. [illegible]	D-1		2			0	2			0			0	0	2	0	2
d. [illegible]	D-1		1			0	1			0			0	0	1	0	1
e. [illegible]	D-1		1			0	1			0			0	0	1	0	1
f. [illegible]	D-1	E-1	2		I-1	1	3			0			0	0	1	2	3
g. [illegible] diagnostic [illegible]			0		L-1	1	1			0			0	0	0	1	1

'NTERVIEW GUIDE II:

1. "Describe the major problems and strengths of this pupil in Math."

	CYCLE I							CYCLE II							Cycle I & II		
	Grade 2 (n=3)			Grade 5 (n=3)			Cycle I	Grade 2 (n=1)			Grade 5 (n=1)			Cycle II			
esponse Category	X	Y	Total	X	Y	Total	Total	X	Y	Total	X	Y	Total	Total	Total	Total	Total
1. [illegible]ot/independent/self-initiating			0	J-5		5	5			0		A-1	1	1	5	1	[illegible]
2. Can/can't compete at grade level	Q-4	F-3	8	J-1		1	9		H-4	4		A-2	2	6	5	10	[illegible]
3. General difficulty/proficiency in math	Q-2	E-3	5	J-1	D-2 L-2	5	10		H-2	2		A-3	3	5	3	12	15
4. Good/poor grasp of concepts	Q-2	E-1 F-4	7	J-2	D-[illegible] L-3	12	19			0		A-1	1	1	4	15	[illegible]
5. Good/poor application of concepts	Q-2		2		D-2 L-1	3	5		H-3	3			0	3	2	5	[illegible]
6. Speedy/slow worker	Q-1	E-2	3		D-[illegible] L-1	4	7		H-2	2			0	2	1	6	[illegible]
7. Learned some combinations incorrectly in preceding grade.	Q-2		2			0	2			0			0	0	2	0	[illegible]
8. Careful/careless work	Q-1		1	J-2	D-[illegible] L-1	7	8		H-1	1			0	1	[illegible]	[illegible]	[illegible]
9. Accurate/inaccurate work	Q-2		2	J-4	L-2	6	8			0			0	0	[illegible]	2	[illegible]
10. Language barriers	Q-1		1		L-1	1	2			0			0	0	1	1	[illegible]
11. Good/poor attention span	Q-2	E-1	3	J-1		1	4			0			0	0	3	1	[illegible]
12. Good/poor study habits			0	J-3	L-1	4	4		H-2	2		A-1	1	3	[illegible]	4	[illegible]
13. Good/poor self-confidence			0	J-1	D-1 L-1	3	3		H-2	2		A-1	1	3	1	5	4
14. Good/poor attitude	Q-1		1	J-1		1	2		H-2	2			0	2	2	2	[illegible]
15. Works well/doesn't work well with peers			0	J-3	D-1	4	4			0			0	0	3	1	[illegible]
16. Good/poor in number facts	Q-1	F-2	3	J-1		1	4		H-4	4			0	4	2	6	[illegible]
17. Problems with place value	Q-1	F-4	5			0	5			0			0	0	1	4	[illegible]
18. Good/poor on word problems	Q-3	F-3	6	J-1	D-3 L-1	4	10			0		A-4	4	4	4	[illegible]	[illegible]
19. Good/poor multiplication		F-3	3	J-1	D-1	2	5			0		A-6	6	6	1	[illegible]	[illegible]
20. Good/poor division			0		D-1	1	1			0		A-5	5	5	0	[illegible]	[illegible]

INTERVIEW GUIDE II:

2. "Describe the major problems & strengths of this pupil in Reading."

Response Category	CYCLE I Grade 2 (n=4) X	 Y	 Total	 Grade 5 (n=1) X	 Y	 Total	 Cycle I Total	CYCLE II Grade 2 (n=2) X	 Y	 Total	 Grade 5 (n=2) X	 Y	 Total	 Cycle II Total	 Cycle I and II Total X	 Total Y	 Total
1. Poor/excellent reader (above/below grade)	C-2	I-2 E-1	5	D-3		3	8		I-2 H-1	3		A-1 D-2	3	6	5	9	14
2. Good/poor comprehension	C-2	F-6 E-4	12	D-6		6	18		I-3 H-5	8		A-4	4	12	8	22	30
3. Good/weak vocabulary	D-1	F-1	2	D-6		6	8		I-2 H-2	4		A-4	4	8	7	9	16
4. Good/weak oral reading/word attack skills	D-2	F-2 I-2 E-1	7	D-2		2	9		I-1 H-2	3		A-1	1	4	4	9	13
5. Good/poor phonetic analysis	C-2	F-1 E-1	4			0	4		I-1 H-3	4			0	4	2	6	8
6. Good/poor spelling		F-4 I-1	5			0	6		I-3	3			0	3	0	9	9
7. Good/poor on root words		F-3	3			0	3			0			0	0	0	3	3
8. Good/poor decoding skills		E-3 I-3 F-1	7			0	7		H-1	1		A-1	1	2	0	9	9
9. Good/poor sentence structure skills		E-1 I-2 F-3	6			0	6			0		A-1	1	1	0	7	7
10. Good/poor writing	D-1		1	D-1		1	2		I-3	3			0	3	2	3	5
11. Poor grammar/idiom from family	D-1		1			0	1			0			0	0	1	0	1
12. Sloppy/incomplete/hurried work	D-2	E-1	3			0	3			0		A-1	1	1	2	2	4
13. Physical problem (eye)	D-1	F-1 E-1	3			0	3			0		A-1	1	1	1	3	4
14. Good/poor motivation/interest	D-3	F-1 E-1 I-1	6			0	6		I-3 H-1	4		D-1	1	5	3	8	11
15. Class behavior problem		I-1	1			0	1			0			0	0	0	1	1
16. Problems with instruction			0			0	0			0		D-1	1	1	0	1	1
17. Poor speech/bilingual		F-1 E-2	3	D-1		1	4			0			0	0	1	3	4
18. Problems in critical thinking	D-1	F-1	2	D-2		2	4			0		D-1	1	1	3	2	5
19. Low self-confidence	D-1	I-2 E-1	4	D-1		1	5		I-1	1		A-1	1	2	2	5	7
20. Slow reader/problem meeting schedule	D-1	E-1	2	D-1		1	3			0		A-1	1	1	2	2	4
21. Good/poor study/work habits	D-1	I-1 E-1	3	D-3		3	6		I-2 H-2	4		A-2 D-3	5	9	4	11	15

INTERVIEW GUIDE IIc

3. "What are your instructional plans for this pupil in Math?"

CYCLE I | CYCLE II

Response Categories	Grade 2 (n=4)			Grade 5 (n=3)			Cycle I	Grade 2 (n=1)			Grade 5 (n=1)			Cycle II	Cycle I and II		
	X	Y	Total	X	Y	Total	Total	X	Y	Total	X	Y	Total	Total	Total (X)	Total (Y)	Total
1. Focus on concepts rather than computations	Q-4 J-2	F-1	7		O-1 L-2	3	10			0			0	0	6	4	10
2. Use visual/tactical materials; spatial logic	Q-1	F-1 E-2	4			0	4			0			0	0	1	3	4
3. Review basics; practice basic computations	J-2	F-4 E-2	8		O-3	3	11		H-4	4		A-2	2	6	2	15	17
4. Home assignments & drills/special tasks	Q-2 J-1	F-1 E-2	6		O-3 L-1	4	10		H-2	2		A-3	3	5	3	12	15
5. Use flashcards		E-3	3			0	3		H-2	2			0	2	0	5	5
6. Do boardwork			0		O-1	1	1			0		A-1	1	1	0	2	2
7. Individual aide help	J-1	F-1 E-3	5		O-3	3	8		H-1	1		A-1	1	2	1	9	10
8. Group instruction following text	J-2	E-2	4		O-1	1	5			0		A-1	1	1	2	4	6
9. Help pupil get organized	Q-1 J-2		3			0	3			0			0	0	3	0	3
10. Use enrichment materials/games			0		O-1	1	1		H-1	1		A-2	2	3	0	4	4
11. Use teacher-made materials			0		O-1	1	1			0			[illegible]	0	0	1	1
12. Keep up with main class groups			0		O-3	3	3			0			0	0	0	3	3
13. Confer with pupil/parents		E-2	2			0	2			0			0	0	0	2	2
14. Demand accuracy	Q-1		1			0	1		H-1	1		A-2	2	3	1	3	4
15. Push pupil as fast as possible	Q-1 J-1		2		L-2	2	4			0			0	0	2	2	4
16. Work on study habits, concentration, self-assurance, self-discipline	Q-1 J-3		5		O-2	2	7		H-1	1		A-1	1	2	5	4	9
17. Work on fractions & decimals/metrics	J-1		1		O-1	1	2			0			0	0	1	1	2
18. Work on measurement	J-1		1			0	1			0			0	0	1	0	1
19. Assign to lower group			0			0	0		H-1	1		A-1	1	2	0	2	2
20. Assign to middle group	Q-1		1			0	1		H-1	1			0	1	1	1	2
21. Assign to top group			0			0	0		H-4	4		A-3	3	7	0	7	7
22. Know place value/carrying digits		F-4	4		O-1 L-1	2	6						0	0	0	6	6
23. Work in division/																	

INTERVIEW GUIDE II:

4. "What are your instructional plans for this pupil in Reading?"

	CYCLE I							CYCLE II									
	Grade 2 (n=4)			Grade 5 (n=3)			Cycle I	Grade 2 (n=2)			Grade 5 (n=2)			Cycle II	Cycle I and II		
Response Categories	X	Y	Total	X	Y	Total	Total	X	Y	Total	X	Y	Total	Total	Total(X)	Total(Y)	Total
1. Group instruction/ follow texts	Q-2	F-4 I-2	8		O-1	1	9		H-2 I-1	3		A-3 D-4	7	10	2	17	19
2. Use SRA			0		L-5	5	5			0			0	0	0	5	5
3. Use Language Master		E-1	1			0	1			0		A-1	1	1	0	2	2
4. Work on comprehension		E-3 I-1	4	J-1	O-2	3	7		H-4	4		A-1 D-1	2	6	1	12	13
5. Work on oral reading/ pronunciation	Q-2	F-1	3		O-1	1	4			0		A-1	1	1	2	3	5
6. Work on vocabulary/ spelling word attack	Q-1	F-6 E-1	8	J-2	O-1 L-1	4	12		H-3	3		A-1	1	1	3	13	16
7. Work on decoding skills		F-1 I-1	2			0	2		H-3	3			0	3	0	5	5
8. Work on sequencing/ structure	Q-1	F-2 E-1	4			0	4			0			0	0	1	3	4
9. Work on phonics		E-1	1	J-1		1	2		H-1	1			0	1	1	2	3
10. Work on reading speach			0		O-1	1	1			0		A-1	1	1	0	2	2
11. Improve attitude (discipline)	Q-1	I-2	3		L-1	1	4		I-2	2			0	2	1	5	6
12. Widen library reading	Q-2		2	J-1	O-1	2	4		I-1	1			0	1	3	2	5
13. Push pupils into harder work	Q-4		4		O-1 L-1	2	6		I-1	1		A-1	1	2	4	4	8
14. Demand accuracy		I-1	1			0	1			0			0	0	0	1	1
15. Demand that work is completed			0			0	0			0		D-1	1	1	0	1	1
16. Instill self-confidence/ praise pupil		I-2	2		O-1 L-2	3	5		I-2 H-1	3		A-1	1	4	0	9	9
17. Have pupil tutor others			0		O-1	1	1		I-1	1		D-2	2	3	0	4	4
18. Extend into creative writing	Q-1		1			0	1			0		A-1	1	1	1	1	2
19. Work in small groups	Q-1	I-1 E-3	5		O-2	2	7			0		D-1	1	1	1	7	8
20. Work independently/use contracts			0		O-4 L-1	5	5			0		D-1	1	1	0	6	6
21. Special/no special instructional plan		I-1 E-1	2			0	2		I-3	3		D-1	1	4	0	6	6
22. Assign to lower group			0			0	0		I-4 H-3	7		D-2	2	9	0	9	9
23. Assign to middle group	Q-2		2			0	2		H-2 I-2	4		A-2 D-1	3	7	2	7	[illegible]
24. Assign to higher group	Q-1		1			0	1					A-3 D-2	5	5	1	5	[illegible]

INTERVIEW GUIDE III: Cycle 1:

1. "For each target pupil, what is this pupil doing in Math now?"

Response Category	Grade 2 (n=3) X	Y	Total	Grade 5 (N=4) X	Y	Total	Total X	Y	Cycle Total
1. Group instruction; pupils follow some basic programs	G-6 E-2 M-4		12	C-2		2	14	0	14
2. Teachers made assessment comments on "how" rather than "what" pupils doing.	M-4 E-2		6	A-3 C-3		6	12	0	12
3. Lots of drills/basic computations	G-6 E-4		10	A-5		5	15	0	15
4. Work in basic texts	E-4		4	A-3 C-1	L-2	6	8	2	10
5. Work in number facts to 20	M-1 E-3		4			0	4	0	4
6. Using flash cards	G-6 E-4		10	A-3 C-3	L-2	8	16	2	18
7. Understanding numerals/ ordinals	M-3		3			0	3	0	3
8. Using math games	M-1 E-3		4	C-1	0-5	6	5	5	10
9. Doing homework			0	C-2		2	2	0	2
10. Using dittos	G-6 E-4		10	A-3 C-1		4	14	0	14
11. Doing board work	G-6 E-1		7	A-1	0-5	6	8	5	13
12. Involved in individual/small group activities	M-1 E-1		2	A-1 C-1		2	4	0	4
13. Using special remedies book	M-1		1			0	1	0	1
14. Using number patterns & sequences	M-3 B-6		9			0	9	0	9
15. Using math center with worksheets	E-1		1			0	1	0	1
16. Working in pages and dittos in class	E-1		1			0	1	0	1
17. Working with adult aides	E-4		4	C-1		1	5	0	5
18. Working on place value	G-6		6	C-1		1	7	0	7
19. Using manipulatives	E-2		2			0	2	0	2
20. Working on speed & accuracy			0	C-1		1	1	0	1
21. Using teacher made geometry series			0			0	0	0	0
22. Work on multiplication			0	A-3 C-3		6	6	0	6
23. Work on dvision			0	A-4 C-4	-1 L-2	11	8	3	11
24. Work on fractions/metric system			0	C-1	0-5 L-4	10	1	9	10
25. Tutoring other pupils			0	C-1		1	1	0	1

INTERVIEW GUIDE III: Cycle I:

2. "For each target pupil, what is this pupil doing in Reading now?"

Response Category	Grade 2 (n=4)			Grade 5 (n=5)			Total		Cycle I
	X	Y	Total	X	Y	Total	X	Y	Total
1. Pupils followed some basic activity in class.	I-4 G-5		9	A-6 D-1 C-6	L-6	19	22	6	28
2. Teacher made assessment comments on "how" rather than "what" pupils doing	M-2 E-1 I-2		5	A-2 C-4 D-4		10	15	0	15
3. Work in basic skills & phonics	E-6 M-1 I-1		8	C-1	L-1	2	9	1	10
4. Small group oral reading	M-3 E-2 I-1 G-2		8	A-2		2	10	0	10
5. Working in basic reader/text	G-6 I-1 E-2 M-1		10	A-5 D-3 C-5		13	23	0	23
6. Work in Wisconsin Series	E-3		3			0	3	0	3
7. Work in Ginn 360 Series	E-2		2			0	2	0	2
8. Work in Language Master	G-2 E-1		3	D-1		1	4	0	4
9. Work in vowel sounds	I-2 E-2		4			0	4	0	4
10. Work above/below grade level	M-2 I-3		5			0	5	0	5
11. Trying to catch up in new curriculum	M-2 I-3		5			0	5	0	5
12. Work on vocabulary	M-2 I-2 E-4		8	A-1	D-2 L-1	4	9	3	12
13. Work in sequencing	I-1 E-2		3			0	3	0	3
14. Work in comprehension	M-1		3	A-2	D-2 L-1	5	5	3	8
15. Receiving individual help	M-3 I-3 E-1		7	C-2 D-2		4	11	0	11
16. Independent work	M-1		1	C-2 D-2	D-5	9	5	5	10
17. Pursuing special interests/creative	I-1		1	A-1 C-2 D-2	D-5	10	6	5	11
18. Using games			0	A-1	D-3	4	1	3	4
19. Library reading & skills	I-1 E-1		2	A-1 C-1	D-1	3	4	1	5
20. Group discussions			0	C-1		1	1	0	1

INTERVIEW GUIDE III: Cycle II:

1. "Have there been any changes in any of the target pupils, or in the instructional program for any of them during the past week in Math?"

Response Category	Grade 2 (n=2)			Grade 5 (n=1)			Total Cycle II		
	X	Y	Total	X	Y	Total	X	Y	Total
1. No change/little change					A-2	2	0	2	2
2. Keeping up with group	E-2		2		A-1	1	2	1	3
3. Improving since conference with parents					A-1	1	0	1	1
4. Getting more negative toward school					A-1	1	0	1	1
5. Less of a behavior problem	H-1		1			0	1	0	1
6. Improved interest in school & math	H-1 E-1		2			0	2	0	2

INTERVIEW GUIDE III: Cycle II:

2. "Have there been any changes in any of the target pupils, or in the instructional program for any of them during the past week in Reading?"

	Grade 2 (n=3)			Grade 5 (n=3)			Total		Cycle II
Response Categories	X	Y	Total	X	Y	Total	X	Y	Total
1. No change/little change	I-1		1		A-1 D-3	4	1	4	5
2. Improving study habits			0		A-1	1	0	1	1
3. Improving since parent conference	E-1		1		A-2	2	1	2	3
. Doing more/less homework			0		A-1	1	0	1	1
5. More stress on vocabulary/spelling	I-1		1	K-2	A-1	3	3	1	4
6. Being tougher on pupil			0	K-1	D-1	2	1	1	2
7. Stress oral reading more	I-1		1	K-1		1	2	0	2
8. Letting pupil tutor others			0		D-1	1	1	0	1
9. Assigning more work/pushing pupil			0	K-2	D-1	3	2	1	3
10. Moved pupil up/down in groups	I-1 H-1 E-1		3		D-1	1	3	1	4
11. Stressing speed more			0	K-1		1	1	0	1
12. Falling behind; needs to repeat			0	K-2		2	2	0	2
13. Increasing interest in wide reading	H-1		1			0	1	0	1
14. Changed pupil's reader	H-1		1			0	1	0	1

NTERVIEW GUIDE IV: Cycle I:

1. "Please describe the program so far of this pupil in Math."

	Grade 2 (n=2)			Grade 5 (n=4)			Total		Cycle
esponse Category	X	Y	Total	X	Y	Total	X	Y	Total
. Global comments on pupil program	H-1 E-6		7	C-1 A-1	O-5 L-6	13	9	11	20
2. Comments on borrowing/regrouping	H-3 E-5		8			0	8	0	8
3. Comments on number facts/combinations	H-5 E-4		9	C-1		1	10	1	10
4. Comments on basic computational skills	H-4 E-3		7	C-2 A-1	O-1	4	10	1	11
5. Comments on pupil speed of work	H-3 E-2		5	C-1	O-1 L-2	4	6	3	9
6. Comments on pupil study habits	H-1 E-1		2	C-3	O-4 L-1	8	5	5	10
7. Comments on progress in:									
a. addition			0	A-6 C-3		9	9	0	9
b. subtraction			0	A-5 C-3		8	8	0	8
c. multiplication	H-4		4	A-6 C-4	O-1	11	14	1	15
d. division			0	A-6 C-4	O-1	11	10	1	11
e. fractions			0	A-1 C-5	O-1	7	6	1	7
f. metrics/ geometry			0	C-1	O-3	4	1	3	4
8. Comments on pupil attitude	H-2 E-2		4		O-4 L-2	6	4	6	10
. Comments on pupil self-concept	H-2 E-1		3		O-2 L-1	3	3	3	6